Multi laser disc player CDV400

00R/02R/05R/19R

Service
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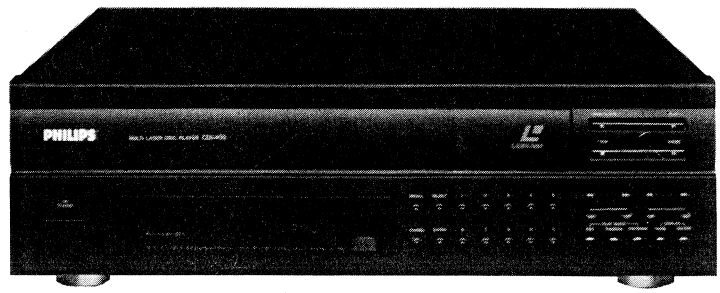

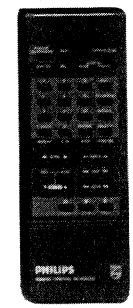

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Service Manual

LASER DISC

- The CDV400/PAL is an advanced Multi Laser Disc player that eccepts laser optical discs of all sizes, from 8 cm (3 inch) up to 30 cm (12 inch) with no need of an adapter. Disc type and size detection are fully automatic.
  - Plays all laser discs, CD video and CD discs
  - Full remote control operation.
  - 20 track or chapter programming.
  - Random play mode.
  - Multi-function FTD.
  - Edit function.
- Introduction date: C-periode 1990.
- The optical pick-up assy is operating according the 3-beam tracking principle
  Type number: KHS-130A
  Codenumber : 4922 691 30237
- Remote control: RC400E CDV code number:
  4822 218 10381

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(S) Varo!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

(N) Varning!

Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

CLASS 1
LASER PRODUCT
3122 110 03420

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

PHILIPS

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

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I. CAUTION

LASER NOTE:

DANGER – Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
CAUTION – The use of optical instruments with this product will increase eye hazard.

LASER BEAM RADIATION SPOT

Laser Diode Properties
Material: Ga-Al-As
Wavelength: 770 – 800 mm (25°C)
Laser Output: Continuous Wave max. 0.4 mW

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

Varo!
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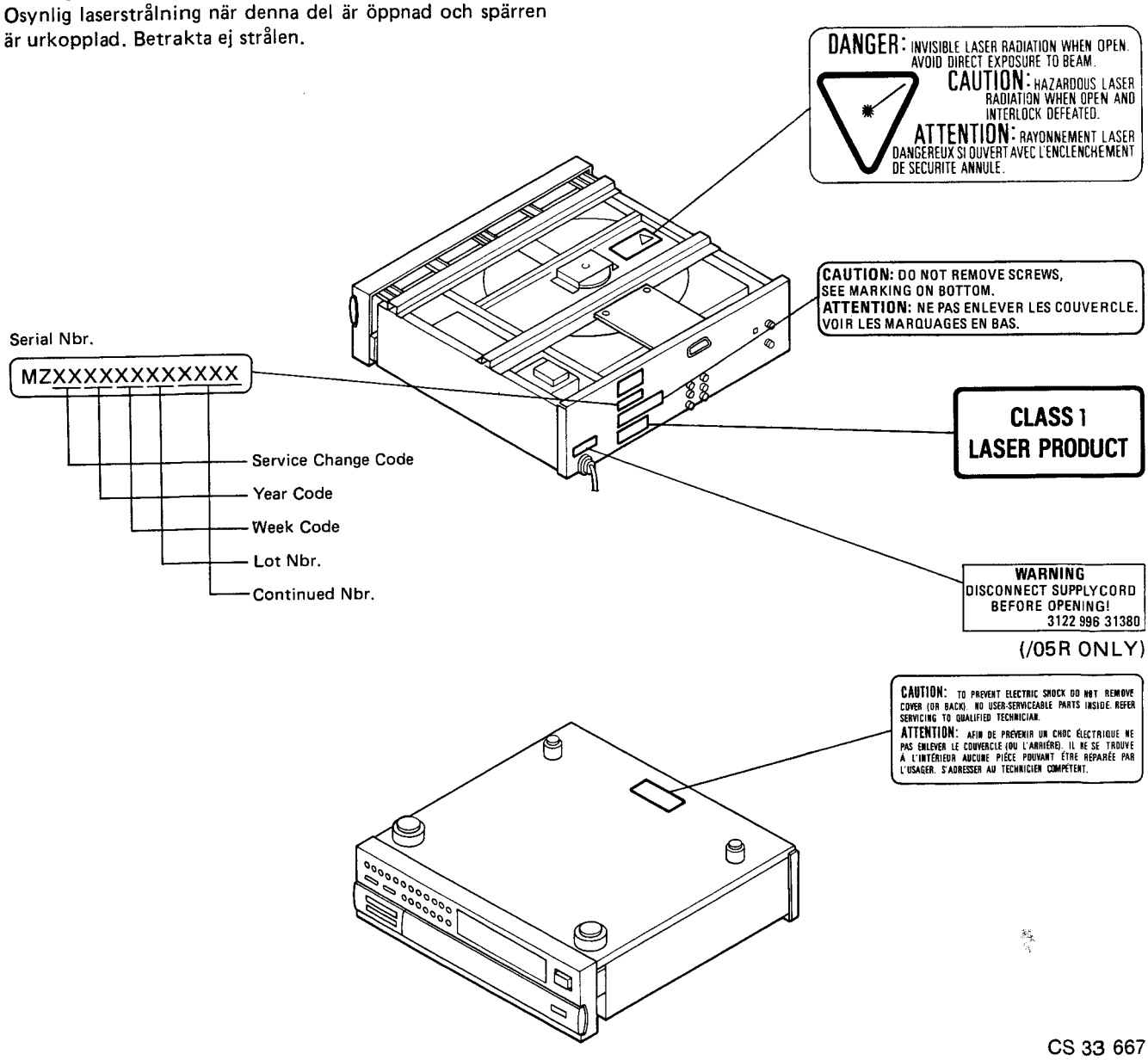
Varning!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

ESD

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.



II. SPECIFICATIONS

• FORMAT

System (or Type):	Optical videodisc system complies with MCA/Philips specifications
Usable disc:	8 cm CD" 20 Min. 12 cm CD: 70 Min. CDV single: Video 6 Min. Audio 20 Min. 30 cm LD (CLV) disc: 60 Min./side 30 cm LD (CAV) disc: 30 Min./side 20 cm LD (CLV) disc: 20 Min./side 20 cm LD (CAV) disc:

• CONNECTIONS:

Video:	
ANT IN:	UHF input (30 ohms)
VHF Output	For PAL TV receiver (75 ohms, unbalanced)
Video Output:	1 Vp-p (75-ohms load, sync. negative) cinch connector
A/V Euroconnector:	Full scart
Audio:	
Analog output:	200 mVeff (1 kHz, 40%),
Digital output:	300 mVeff (1 kHz, –20 dB)
Digital signal characteristics	
Frequency response:	3 Hz to 20 kHz ±0.5 dB
Signal-to-noise ratio:	97 dB
Dynamic range:	94 dB
Distortion rate:	0.003% (1 kHz, –20 dB)

• GENERAL

Power requirements:	220 V/240 V AC, 50 Hz
Power consumption:	39 W
Weight:	12 kg
Dimensions (W x H x D):	420 x 130 x 425 mm
Operational temperature:	+5°C to 35°C.
Humidity range:	5 to 90% (No condensation)
Safety requirements	IEC 65 (BS415 for U.K.)

• ACCESSORIES

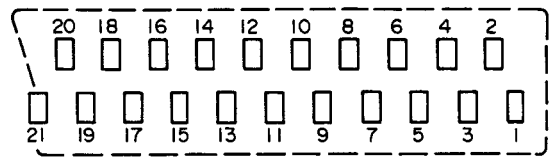
Remote control Transmitter
Size "AA" battery x 2
Coaxial cable x 1
Scart cable x 1
Audio cable x 1

• OTHERS

Auto audio digital output: When playing discs having a digitally-recorded audio signal, audio reproduction circuit is automatically changed to the audio digital circuit.

Specifications and design subject to change without notice.

Euroconnector pin assignments

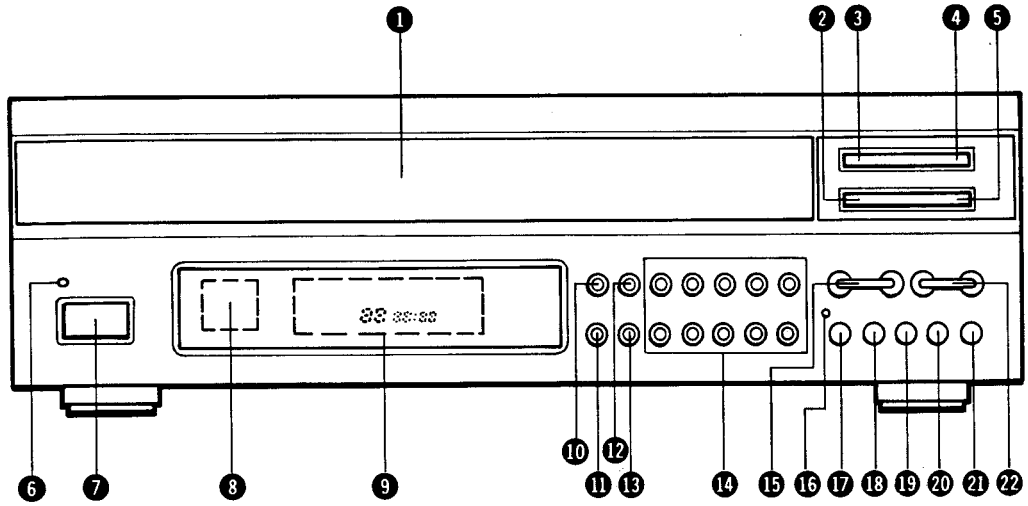


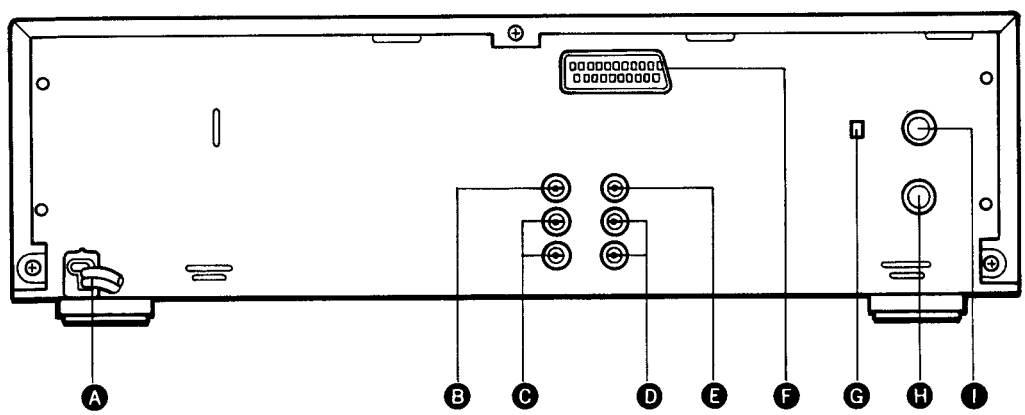
- Pin 1: audio out (right)
- Pin 2: not connected
- Pin 3: audio out (left)
- Pin 4: audio earth
- Pin 5: blue earth
- Pin 6: not connected
- Pin 7: blue out
- Pin 8: player status
- Pin 9: green earth
- Pin 10: not connected
- Pin 11: green out
- Pin 12: not connected
- Pin 13: red earth
- Pin 14: not connected
- Pin 15: red out
- Pin 16: not connected
- Pin 17: CVBS earth
- Pin 18: RGB status earth
- Pin 19: CVBS out/RGB synch
- Pin 20: not connected
- Pin 21: socket earth

The right is reserved to change data if necessary

This CD Video player complies with radio interference requirements as laid down in EC regulations.

III. CONNECTION AND CONTROLS





GLOSSARY OF TERMS

CAV	Constant Angular Velocity
CLV	Constant Linear Velocity
CDV	Compact Disc Video
CD	Compact Disc
LD	Laser Disc
TOC	Table of Contents
FTD	Fluorescent Tube Display
OSD	On-Screen Display

❶ DISC TRAY
Place a disc on the tray.
The tray slides out by pressing the OPEN/CLOSE (▲) button on the player or by pressing the OPEN/CLOSE on the remote control transmitter.

❷ STOP (■) BUTTON
When this button is pressed during play, the disc rotation stops.
In the Stop mode, when more than 10 minutes have elapsed, the player enters the Stand-By mode automatically.

❸ OPEN/CLOSE (▲) BUTTON
Press this button to open and close the disc tray.
When this button is pressed with the disc placed on the tray, the disc tray closes, and the TOTAL TRACK/CHAP and TOTAL TIME appear on the display of the player while the TOTAL TRACK/CHAP, TOTAL TIME and music calendar are displayed on the monitor screen, then the player enters the stop mode.
However, if an LD with no TOC is loaded, playback will start automatically.
When this button is pressed during play, disc rotation stops and the disc tray will open.
When this botton is pressed with the disc tray open, the disc tray closes.
While the disc tray is the opening or closing the CD, CDV or LD indicator flashes.

❹ PLAY (▶) BUTTON
When this button is pressed after placing a disc on the disc tray, the disc slides into the player and play starts.
- Pressing this button in Stop mode starts play.
- Pressing this button during play moves the play position to the beginning of the chapter or track being played, and re-starts play from there.
- Pressing this button can also start program play.
- Pressing this button during playback in a mode other than normal Play mode causes normal Play mode to resume.

❺ PAUSE (❚❚) BUTTON
When this button is pressed during Play mode, play is stopped temporarily. To resume play, press the PLAY button, or the PAUSE button again.

❻ STANDBY INDICATOR
When the AC cord is plugged into an AC outlet, the player enters the Stand-By mode (Normal status: If the disc tray is open, it will be closed.), and this indicator lights.
When the STANDBY button is pressed, the indicator lights up to show that the unit is in the stand-by mode. It will go out when the power is turned ON.

❼ ON/STANDBY BUTTON
When this button is pressed, the player enters the Stand-By mode and the STANDBY indicator lights up. (All the data stored in the memory are then erased.)
Pressing this button and any of the OPEN/CLOSE (▲), PLAY (▶), STOP (■), PAUSE (❚❚), SKIP (⏮, ⏭) buttons turns the power on.

Note: In the Stand-By mode, no operations other than the above are possible.

❽ REMOTE SENSOR
This is the receiver for the signal transmitted from the remote control transmitter.

❾ MULTI-FUNCTION DISPLAY

❿ RECALL BUTTON
Press this button to check the programmed contents.

⓫ CANCEL BUTTON
Use this button in the following cases.
- To cancel repeat play.
- To correct an entry made using the numeric buttons (only during programming). When this button is pressed again, the program mode will be cancelled.
- To cancel Programmed play.
- To cancel random play.
- To cancel A-B repeat.

⓬ SELECT BUTTON (LD)
Press this button to recall the specific position you want to view and/or listen to (search operation).
With a LD (CAV) disc, pressing this button activates frame number searh mode. With a LD (CLV) extended play disc, pressing this button activates time number search mode.

⓭ ENTER BUTTON
Press this button to enter a program for programmed play.

⓮ NUMBERED BUTTONS
Use these buttons when searching or programming chapters or tracks.

⓯ SKIP (⏮ / ⏭) BUTTONS
Press one of these buttons to skip to the beginning of a chapter or track.

⏭ : When this button is pressed during Play mode, the beginning of the next chapter or track is detected. When it is kept pressed, the chapter or track number is advanced continuously.

⏮ : When this button is pressed during Play mode, the beginning of the current chapter or track is detected.
When it is kept pressed, the chapter or track number is reversed continuously.

⓰ EDIT INDICATOR
Lights up when the EDIT button is pressed.
It lights up during EDIT play.

⓱ EDIT BUTTON
With this function, an interval of four seconds will be left between tracks during play. It is convenient when recording from a disc to tape.
Press this button when entering the edit program.

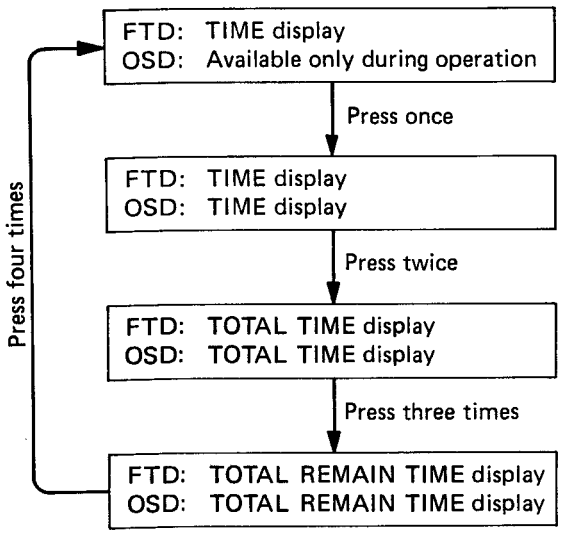
⓲ RANDOM BUTTON
Press this button to start random play.
(Effective only for CD, CDV-Single, and LD disc with TOC)

⓳ PROGRAM BUTTON
This button is used to program the desired chapters or tracks in a desired order (programmed play).

⑳ DISPLAY MODE BUTTON

This button is used to changed the contents of the Fluorescent Tube Display (FTD) on the player and On-Screen Display (OSD) on the monitor screen.

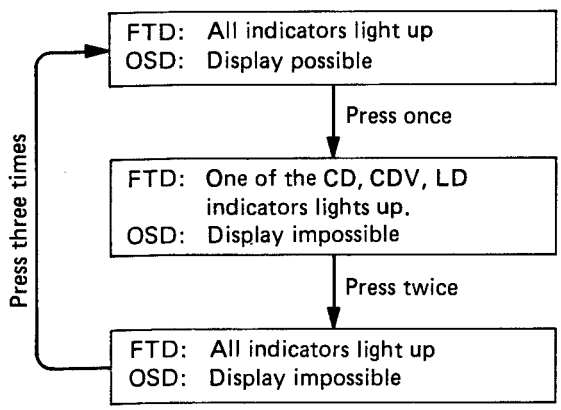
Note: This function is effective only when Display ON/OFF is ON (and both FTD and OSD are activated).



Displayed contents differ depending on the disc being played.

㉑ DISPLAY ON/OFF BUTTON

This button is used to switch off the Fluorescent Tube Display (FTD) on the player or the On-Screen Display (OSD) on the TV.
Display status which depends on the setting of the display ON/OFF button is shown below.



㉒ SEARCH BUTTONS

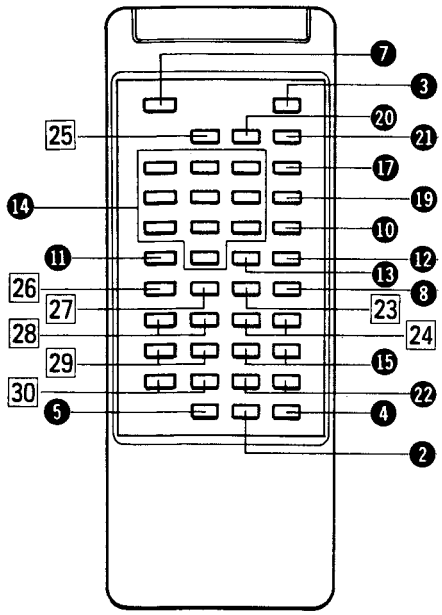
When one of these buttons is pressed and held down during Play mode, the player searches forward or backward.

▶▶ : Forward search.
◀◀ : Backward search.

The search speed varies in two steps. It is low for the first two seconds after the button is pressed, and then becomes high.

Ⓐ MAINS CORD
Ⓑ DIGITAL AUDIO OUTPUT, COAXIAL
Ⓒ REMOTE CONTROL IN/OUT
Ⓓ AUDIO OUTPUT L/R
Ⓔ VIDEO OUTPUT
Ⓕ A/V CONNECTOR
Ⓖ CHANNEL SELECTOR (/02R/05R ONLY)
Ⓗ ANTENNA INPUT (/02R/05R ONLY)
Ⓘ UHF OUTPUT (/02R/05R ONLY)

Remote control



Any other button than given below serves the same operation as does its corresponding one of a CDV player.

23 AMS (Auto Music Scan) BUTTON
Press this button to start AMS play, or when entering the program for AMS play.

24 INDEX (◄◄ , ►►) BUTTONS
Press one of these buttons to activate an index skip operation with a CD or CDV on which the index numbers have been recorded.

25 I-II BUTTON (LD)
If you wish to listen to only one audio channel, as in the case of a bilingual disc, press the I-II button to select the desired channel. Each press switches the selected channels as follows: 1/L → 2/R → 1/L and 2/R (stereo) → 1/L → ....

26 REPEAT BUTTON
Use this button for repeat play.

27 A-B BUTTON
Use this button for a block repeat between points A and B. To stop the process, press the Cancel button.

28 STEP (◄II IIP) BUTTONS (CAV - Constant Angular Velocity)
Press one of these buttons to freeze the picture. After this, each press of a button moves the still frame step by step in either direction.
To cancel the still picture, press the PLAY (►) button.

29 SPEED PLAY (REV./FWD) BUTTONS [CAV]
With these buttons you can determine the direction of play. You must then press on the REV./FWD keys to raise of lower the default speed of 1/4. This ranges from three times the normal speed to one frame per three seconds.

30 SPEED (▲/▼) SET BUTTONS [CAV]
When the power is switched ON the initial speed is 1/4 the normal speed.

With these buttons the speed can be raised or lowered in eight steps after first pressing one of the SPEED REV/FWD buttons.

IV. DISASSEMBLY PROCEDURES

A. TRAY ASSEMBLY REPLACEMENT PROCEDURES

DISMANTLING THE TRAY ASSEMBLY

1. Remove the top cover by extracting screws (C).
2. Remove the RGB assembly (PG06) together with the insulator by removing the screws (D). (Fig. 2-1)
3. Remove the screws (A) retaining the front panel, and stretch the two connective cords for the FRONT assembly. Place the front panel with the control keys facing upward in a position which will not contact the disc tray even when it comes out open. (Figs. 1, 2-1)
4. Remove the top front brace by removing the screws (B). (Fig. 1)
5. Insert the power plug into a power outlet, press the OPEN button to open the disc tray, then unplug the power plug.

Note:
- *If tray assembly will not open, then perform the MANUAL TRAY OPENING PROCEDURES.*
- *When disconnecting the connector (JF01) on the front assembly (PF06), draw out this connector undoing the stopper by the straight-edge screwdriver inserted as indicated by arrows in Fig. 2-2.*

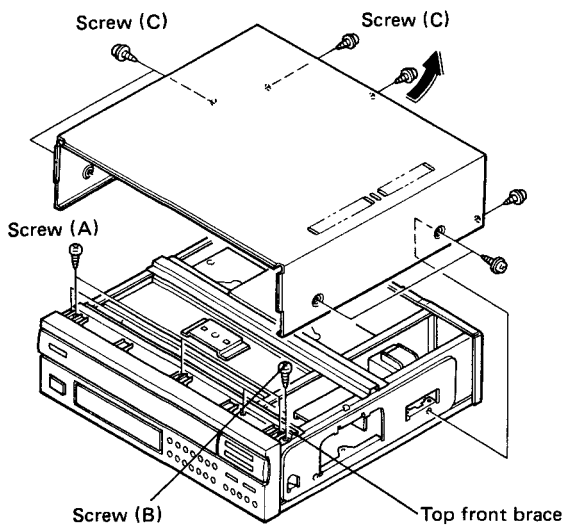


Fig. 1

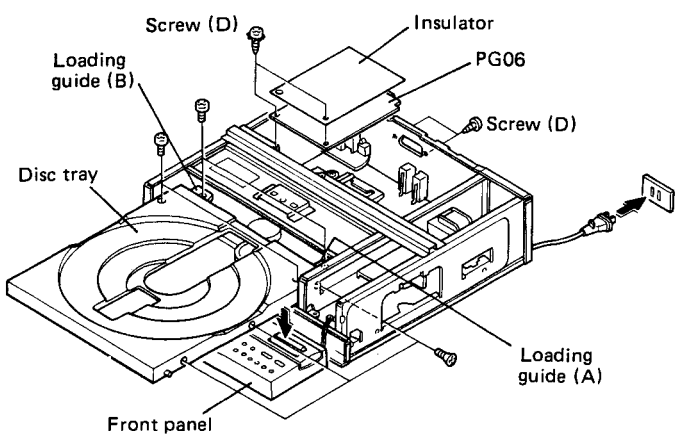


Fig. 2-1

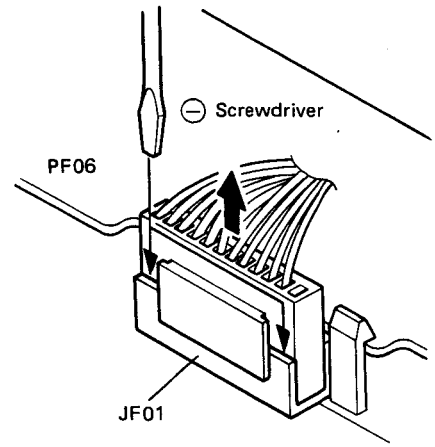


Fig. 2-2

6. Remove the four screws mounting the loading guides (A) and (B). (Figs. 2-1 and 2-3)
   However, in this situation, the one screw mounting the loading guide (A) still remains under the disc tray. Therefore, the disc tray cannot be detached yet.
7. Push in the disc tray about 7 cm from its fully drawn-out status, then remove the three screws on its right side. In this case, insert a screwdriver from the right side of the unit for removal of the one screw located at the depth. (Figs. 2-1 and 2-3)
8. Detach the disc tray and the loading guide (B) (left one).
9. Remove the rest one screw mounting the loading guide (A) (right one). (Fig. 3)
   This one screw needs no reinstallation.

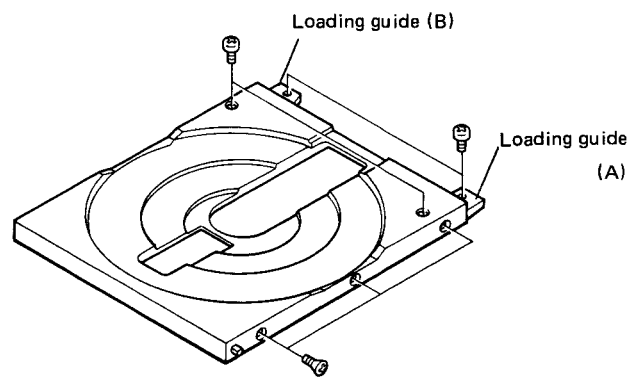


Fig. 2-3

10. Install the loading shaft, loading guide (A), shaft holder and cushion to the disc tray securely by three flat head screws. (Fig. 4-1)
11. Install the loading gear ass'y and loading guide (B) to the disc tray. At this time, set the shaft of the loading gear ass'y into parallelism with the tray end. (Fig. 4-2) Draw care not to let the loading guide (B) off, which is not fixed to the disc tray.

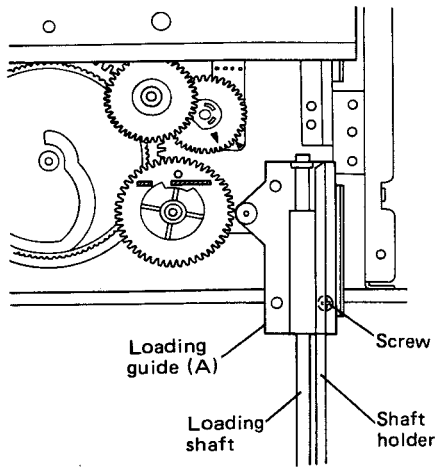


Fig. 3

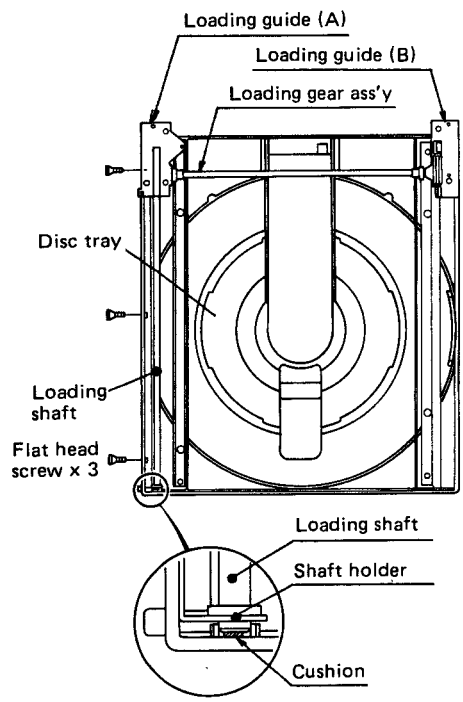


Fig. 4-1

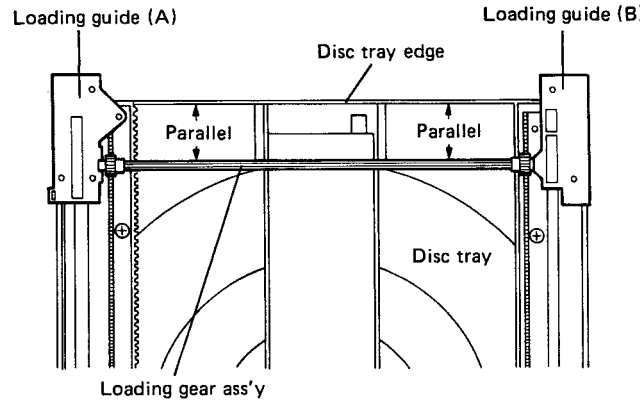


Fig. 4-2

B. MANUAL TRAY OPENING PROCEDURES

1. Rmove the bottom plate. (Fig. 5)
2. Remove the fixing screws of the main assembly (P506), the fixing screws of the ROM assembly (PU06) bracket and the terminal fixing screws of the rear panel. (Fig. 5)

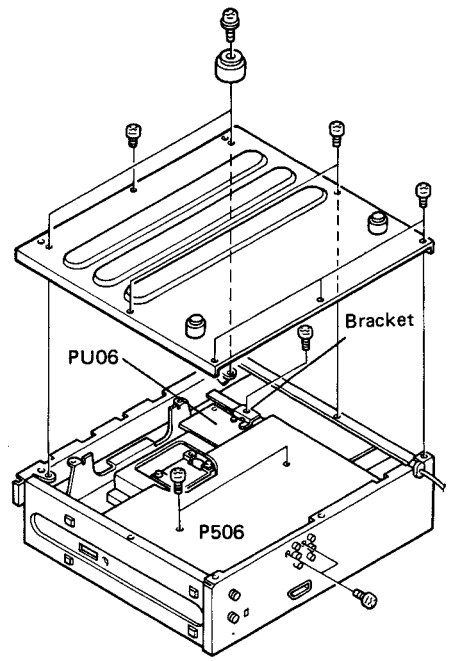


Fig. 5

3. Turn the gear (B) clockwise by inserting your finger through the rectangular hole on the side of the loading motor; the turntable will move down and the disc tray will come out open. (Fig. 6) When the disc tray comes out a little, it can be opened with your hand.

Note: Be careful not to deform the gear teeth, for this will cause abnormal noise during operation.

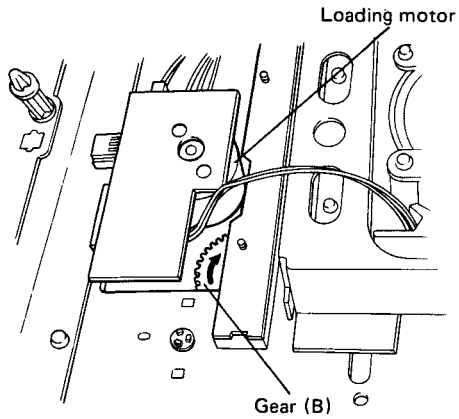


Fig. 6

C. ATTACHING THE TRAY ASSEMBLY

1. Turn the control cam clockwise until it stops. (Fig. 7)
2. Check that the marks (A) and the marks (B) are aligned respectively.
   - If the marks (A) are not aligned between each other, refer to "ATTACHING THE CONTROL CAM" (page 11).
   - If the marks (B) are not aligned between each other, remove the gear (A) and align them. Once the marks (B) are aligned, replace gear (A).

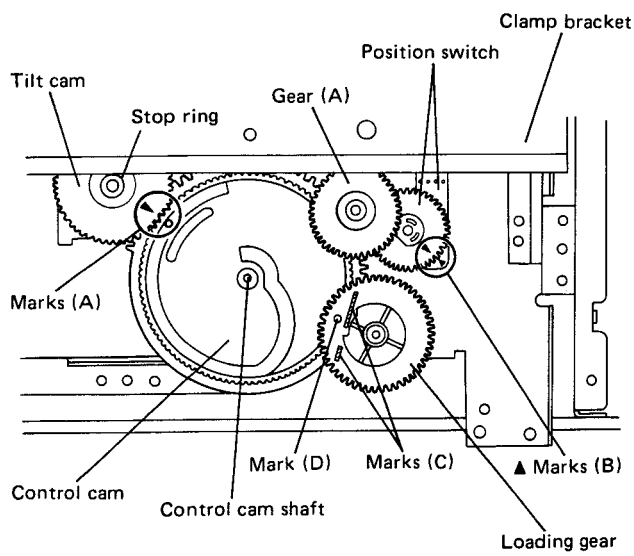


Fig. 7

3. Turn the control cam counterclockwise until it stops.
4. Set the loading gear so that the marks (C) on it are in parallel with the front chassis or clamp bracket. (Fig. 8)

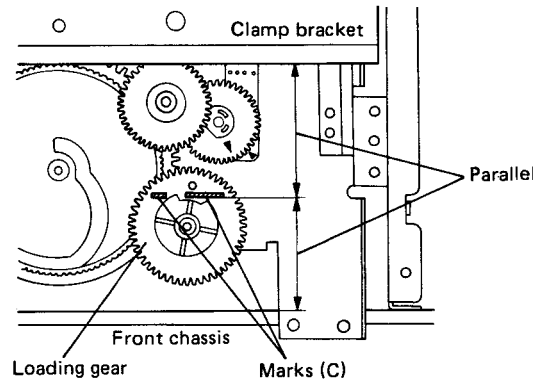


Fig. 8

5. With the loading guides (A) & (B) fully extended, mount the disc tray and loading guides on the chassis. (Fig. 9)
6. Check that the disc tray is inserted in parallel with the chassis.

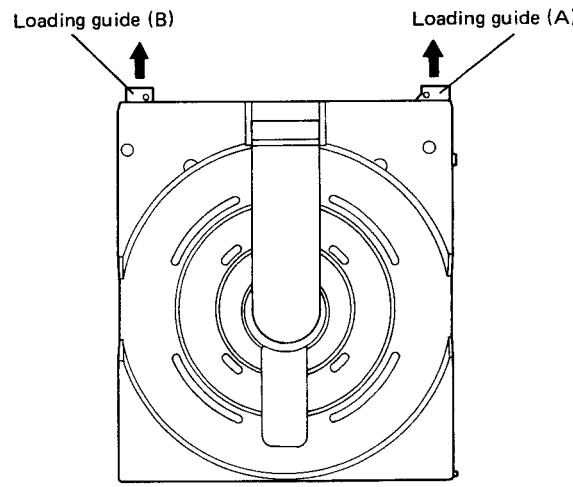


Fig. 9

7. With the disc tray in the fully open position, check that the marks (C) on the loading gear are in parallel with the rear edge of the disc tray. (Fig. 10)

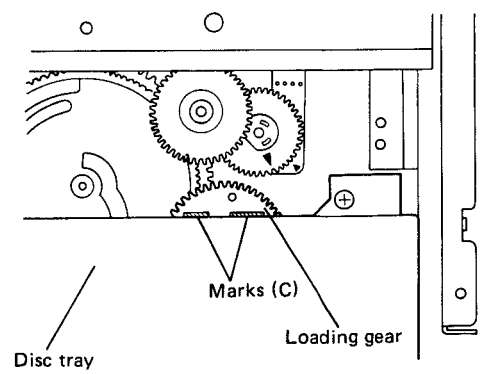


Fig. 10

8. Attach the loading guides (A) & (B) with screws (Figs. 2-1, 2-3), and push the disc tray into the loaded position.
9. Attach the top front brace. (Fig. 1)
10. Return the connective cord of the front panel to the original condition, and attach the front panel with screws. (Fig. 1)
11. Attach the top cover. (Fig. 1)

D. ATTACHING THE CONTROL CAM

In case you have removed the control cam, attach it following the procedure below.

1. Set the slide base drive shaft to the closest position to the control cam shaft. (Fig. 11)

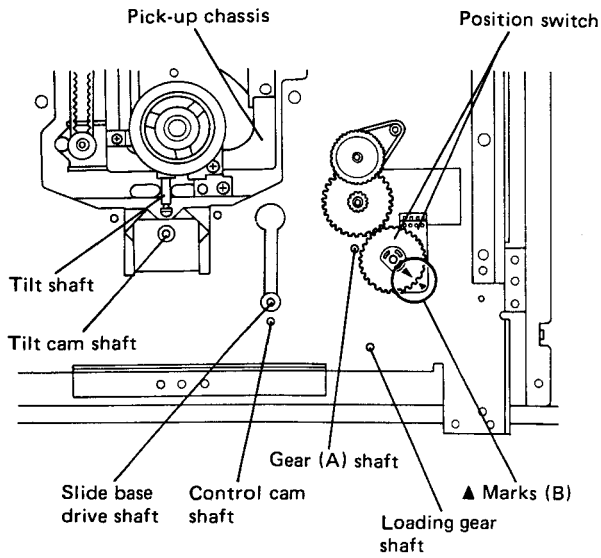


Fig. 11

2. Mount the control cam by passing the control cam's shaft through the hole on the center of the control cam and placing the slide base drive shaft into the guide groove on the back of the control cam, and secure the control cam with the washer. (Fig. 12)
   In case it is difficult to insert the slide base drive shaft into the guide groove, move the slide base drive shaft back by 0.5 to 1 mm apart from the control cam shaft.
3. Turn the control cam clockwise until it stops. Retain the control cam in this position until the tilt cam, gear (A) and loading gear have been mounted. (Fig. 12)
4. Holding the tilt cam so that its mark points to the tilt shaft, mount the tilt cam by passing the tilt cam shaft through the cam hole. Then, lower the tilt cam to a position with which the tilt cam gear does not engage with the control cam gear, and turn the tilt cam counterclockwise until it stops. (Fig. 12)
   Check that the tilt shaft is inserted into the guide groove on the tilt cam.

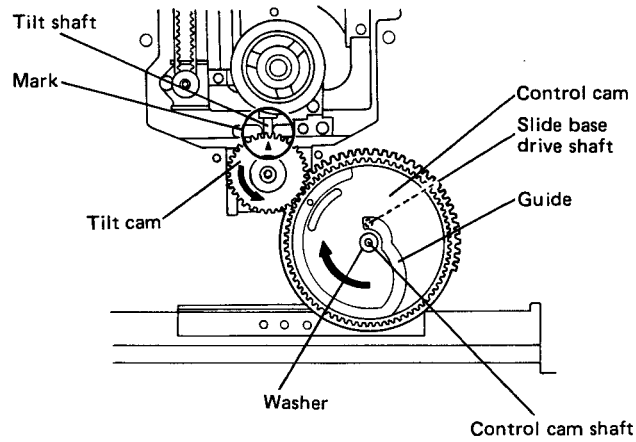


Fig. 12

5. Align the mark (A) on the control cam with the mark (A) on the tilt cam, and mount the E-clip on the tilt shaft. (Fig. 7) When the tilt cam is attached, the control cam may rotate counterclockwise due to the weight of the pick-up chassis. Return the control cam by turning it clockwise until it stops.
6. Align the mark (B) on the position switch as shown in Fig. 7 or Fig. 11.
7. Attach the gear (A) and mount the retaining ring. (Fig. 7)
8. Attach the loading gear so that its mark (D) points to the control cam shaft and mount the retaining ring. (Fig. 7)
9. Attach the tray assembly.

E. PICK-UP ASSEMBLY REPLACEMENT PROCEDURES

Use an ESD wrist strap when working around the unit, especially the LASER assembly.

1. Remove the top cover, then detach the RGB assembly (PG06) together with the insulator. (Figs. 1 and 2-1)
2. Insert the power plug into a power outlet, press the OPEN button to open the disc tray, then unplug the power plug.

Note: If tray assembly will not open then perform the MANUAL TRAY OPENING PROCEDURES (page 9).

6. Turn the slide motor drive gear with your finger to move the PICK-UP assembly until you can see it. (Fig. 14)
7. On the pick-up side, unlock the connector of the flexible wire by sliding the lock in the direction of the arrow, and disconnect the flexible wire. (Fig. 14)

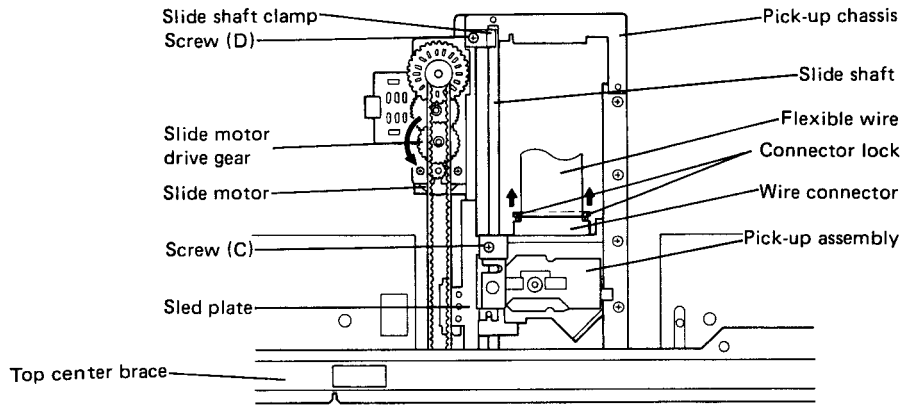


Fig. 14

3. Remove the fixing screws of the clamp bracket at both of its ends. (Fig. 13)
4. Force open the clamp bracket by a pointed instrument such as eyeleteer inserted between the clamp bracket (right side) and the mechanism chassis. Then, release the clamp bracket from a stopper (protrusion) of the mechanism chassis. (Fig. 13)
5. Force open the clamp bracket at its left side by hand, the release the clamp bracket from a stopper of the mechanism chassis, and detach it from the unit. (Fig. 13)

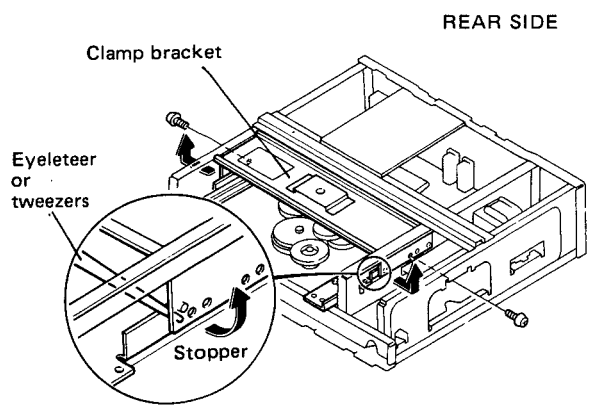


Fig. 13

8. Loosen the screw (E) which retains the slide shaft clamp from the center. (Fig. 15)
9. Remove the screw (C) which retains the sled plate and the screw (D) which retains the slide shaft clamp from the rear side. (Fig. 14)

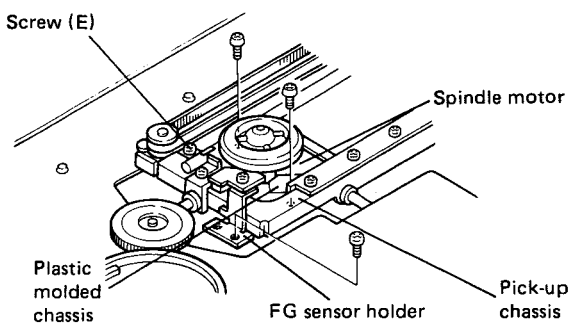


Fig. 15

10. Take out the slide shaft and PICK-UP assembly. (Fig. 16)
11. Replace with the new PICK-UP assembly, and reassemble the parts by reversing the procedure above.

Note: Be careful not to deform the pickup chassis during removal or installation.

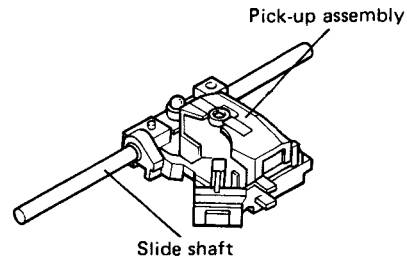


Fig. 16

F. SPINDLE MOTOR REPLACEMENT PROCEDURES

1. Perform steps 1-5 of "E. PICK-UP ASSEMBLY REPLACEMENT PROCEDURES."
2. Rotate the slide motor drive gear, and move the pick-up assembly to the rear panel side to permit the insertion of a hexagon wrench. (Fig. 14)
3. Loosen the hexagon socket head screw using a hexagon wrench, then draw out the turntable from the spindle motor shaft. (Fig. 17)
4. Remove the screws (F) installing the spindle motor to the plastic molded chassis. (Fig. 17)
5. Turn over the unit, thereupon detach the bottom plate, the main assembly (P506) and ROM assembly (PU06). (Fig. 5)
6. Disconnect CN1 on the loading motor assembly. (Fig. 18)
7. Remove the screws (G), then detach the guard plate and the spindle motor. (Fig. 18).
8. Replace the spindle motor with a new one, and perform reassembling in the procedure reverse to above.

Note: When installing the turntable to the spindle motor, follow the next "G. TURNTABLE INSTALLATION PROCEDURES."

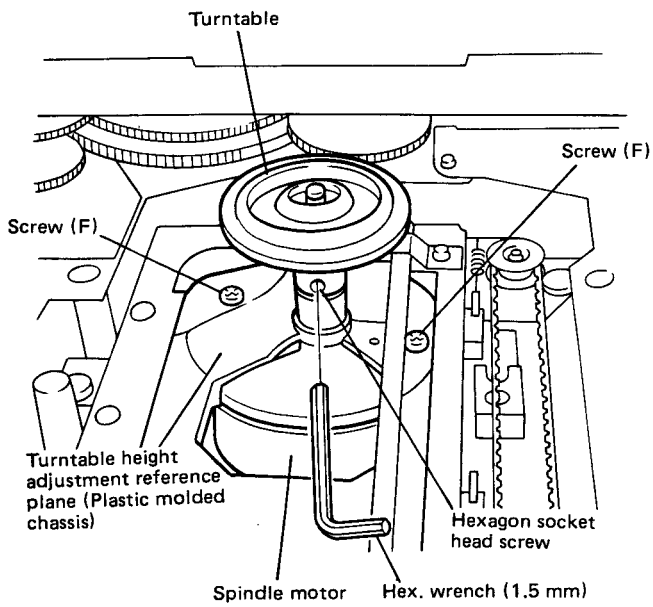


Fig. 17

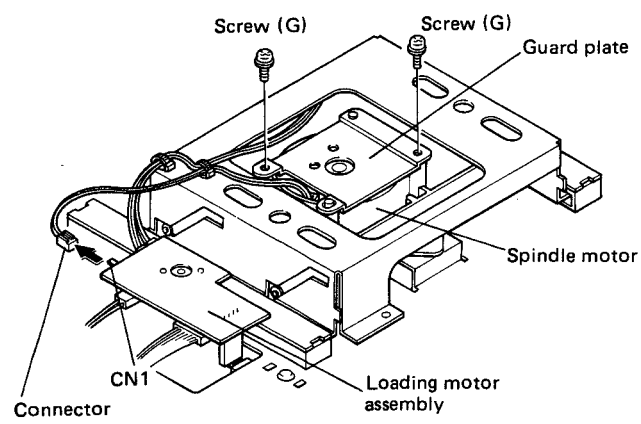


Fig. 18

G. TURNTABLE INSTALLATION PROCEDURES

1. Perform steps 4-8 of "F. SPINDLE MOTOR REPLACEMENT PROCEDURES" in reverse order, and fix the spindle motor to the plastic molded chassis by screws.
2. After full insertion of the turntable to the spindle motor shaft, keep the turntable 2–3 mm away from the bearing of the spindle motor shaft and tighten the hexagon socket head screw temporarily. (Fig. 19)
3. Place the turntable height adjusting device in close contact with the upper surface of the turntable in such a manner that its leg section comes above the height adjustment reference plane of the plastic molded chassis. (Figs. 17 and 20)
4. Loosen the hexagon socket head screw, and lower the turntable until the leg section of the height adjustment device comes into contact with the reference plane. Then, retighten the hexagon socket head screw securely. (Fig. 20)

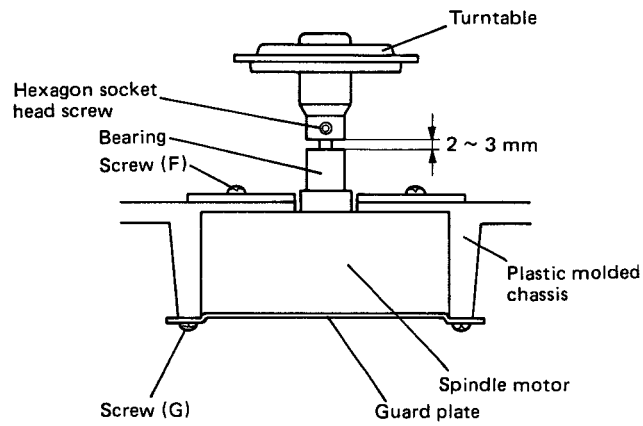


Fig. 19

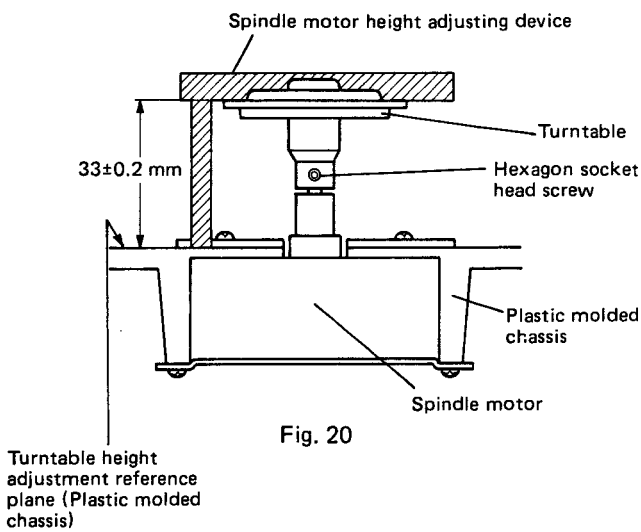


Fig. 20

V. ADJUSTMENT PROCEDURES

FIXTURES AND INSTRUMENTS REQUIRED FOR ADJUSTMENTS

- Small screwdriver
- Small Phillips head screwdriver
- Hexagon wrench (1.5 mm)
- Dual-trace oscilloscope (with delay)
  Voltage range : 0.001 ~ 50 V/div.
  Frequency range : DC ~ 50 MHz
  Probes : 10:1, 1:1
- AF generator
- Frequency counter
  Frequency range: 0 ~ 50 MHz, 8 digit readout
- LD test disc (4822 397 30207)
- LD with digital audio disc (purchase locally)
- CD test disc (Philips 5A) (4822 397 30096)
- Spindle motor height adjusting device (4822 395 80389)
- Service test stand (4822 395 90896)
- Extension cables
  3P, Servo PCB (J281) ~ Main PCB (J501)
  (4822 321 61071)
  11P, RGB PCB (JM02) ~ Main PCB (J511)
  (4822 321 61072)
  12P, RGB PCB (JM01) ~ Main PCB (J701)
  (4822 321 61073)
  24P, Pick-up ass'y ~ Servo PCB (J101)
  (4822 321 61124)

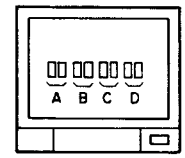
A. ADJUSTMENT PREPARATIONS AND PRECAUTIONS

1. **Player settings**
   When adjusting the player, stand the set with the power transformer side down or place the set on the Service Test Stand, and open the MAIN assembly before starting adjustment.
2. **Opening the tracking servo**
   The tracking servo can be opened and closed during test mode controlled by microcomputer.
   (For details, refer to "Test Mode Operation".)
3. **Test discs**
   The LD test discs used in these adjustments may be either N series or F series. The frame numbers given in the text are N series numbers while those enclosed in parentheses are F series numbers.
4. **Oscilloscope**
   Unless specified otherwise, all oscilloscope settings shown in the connection diagrams are values obtained by using a 10:1 probe.

B. TEST MODE OPERATION

1. **How to enter Test mode:**
   Press and hold the PLAY and PAUSE keys simultaneously, and plug the AC power cord into the power outlet.
   At this time, the player goes automatic in PLAY.
   The player functions as it normally does.
   But the EDIT key, RANDOM key, and PROGRAM key do not operate.
2. **Operation**
   When the unit enters the Test mode, the picture on the TV monitor screen changes to the Test mode picture, where the internal information of the Main μ-COM is displayed.
   Except for the Main μ-COM internal information display mode, the Test mode operations can be controlled by the numeric keys of the Multi Laser Disc Player unit.

- Main μ-COM internal information display mode
  The internal information of the Main μ-COM is displayed on the TV monitor display.



Part A: The internal operation mode of the Main μ-COM is displayed in 2 digits.
00 . . . . . Park mode 06 . . . . . Play mode
02 . . . . . Open mode 0A. . . . . Skip mode
04 . . . . . Set-up mode

Part B: The operation mode of the Slider motor servo is displayed in 2 digits.
80 . . . . . Slider motor servo; Close
81 . . . . . Slider motor servo; High speed
8E . . . . . Slider motor servo; Open
00 . . . . . Slider motor servo; OFF
Tracking servo; OFF

Part C and D: Part C and D respectively represent the control status as follows.

Part C

Control / Display	LD/CD	TILT servo	SCAN	Focus
90	CD	OFF	REV	OFF
91	LD	OFF	REV	OFF
92	CD	ON	REV	OFF
93	LD	ON	REV	OFF
94	CD	OFF	FWD	OFF
95	LD	OFF	FWD	OFF
96	CD	ON	FWD	OFF
97	LD	ON	FWD	OFF
98	CD	OFF	REV	ON
99	LD	OFF	REV	ON
9A	CD	ON	REV	ON
9B	LD	ON	REV	ON
9C	CD	OFF	FWD	ON
9D	LD	OFF	FWD	ON
9E	CD	ON	FWD	ON
9F	LD	ON	FWD	ON

Part D

Control / Display	Tracking	T-count Divider
A0	CLOSE	1/1
A1	CLOSE	1/1
A2	CLOSE	1/1
A3	CLOSE	1/1
A4	OPEN	1/1
A5	OPEN	1/1
A6	OPEN	1/1
A7	OPEN	1/1
A8	CLOSE	1/256
A9	CLOSE	1/256
AA	CLOSE	1/256
AB	CLOSE	1/256
AC	OPEN	1/256
AD	OPEN	1/256
AE	OPEN	1/256
AF	OPEN	1/256

C. STEP MODE

Press RANDOM key "M" appears on screen.
The [0] . . . . [6] keys have the following functions.

1. Key function

[0] key:
The focusing operation can be switched ON/OFF.
Each press of the [0] key alternately toggles focusing ON/OFF. Only in STOP mode.

[1] key:
The tilt servo can be switched ON/OFF.
Each press of the [1] key alternately toggles tilt servo ON/OFF. Only in PLAY mode.

[2] key:
The forward scan can be switched ON/OFF.
Each press of the [2] key alternately toggles forward scan ON/OFF. In STOP mode and in PLAY mode, when the tracking servo is OFF.
Remark:
When the out most slider position is reached, the player goes to the OPEN mode and test mode is terminated.

[3] key:
The reverse scan can be switched ON/OFF.
Each press of the [3] key alternately toggles reverse scan ON/OFF. In STOP mode and in PLAY mode, when the tracking servo is OFF.

[4] key:
The tracking servo can be switched ON/OFF.
Each press of the [4] key alternately toggles tracking servo ON/OFF.

[5] key:
The spindle servo can be switched ON.

[6] key:
FL display and EDIT LED check mode
(1) All FL segments and the EDIT LED light up (1 sec.)
(2) The FL numeric display section lights up (all digits are displayed together, then "0" to "9" and "—" are displayed in sequence).
(3) Every FL function and mode indicator lights up and goes out one by one in sequence, then the EDIT LED lights up and goes out.
(4) All FL segments and the EDIT LED light up (1 sec.).
(5) "End" appears on the FL display.
(6) When pressing the [6] key again, the FL display returns to the actual display function.

2. How to terminate Test mode

Unplug the AC power cord from the power outlet.

D. SERVO ASSEMBLY ADJUSTMENTS

IMPORTANT NOTE:

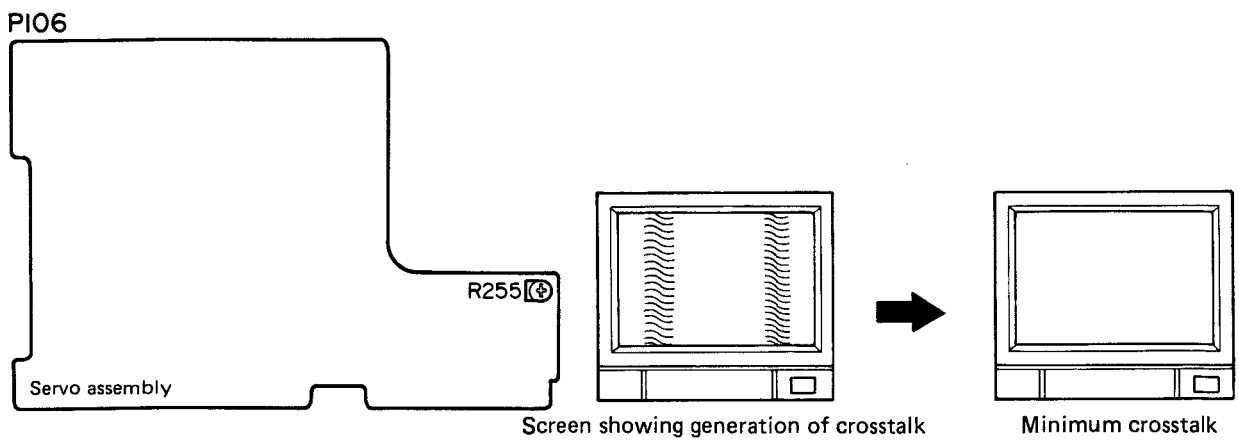
The following Servo adjustments can be performed separately.
Procedure D-7 and D-8
When one of items D-1 to D-6 for servo adjustment has been performed, perform items D-1 to D-6 for servo adjustment again.

D-1 Tilt Balance Adjustment

- Purpose: To adjust the electrical offset of tilt servo by means of the Tilt Balance Control (R255)
- Symptoms indicating need for adjustment: Crosstalk

• Measuring instruments and fixtures • Measuring position • Test disc and player mode • Adjustment position	• TV monitor • Player video output terminals • LD test disc #313 • Servo assembly P106, Tilt Balance Control (R255)	Notice: The LD test discs used in these adjustments may be either N series or F series. The frame numbers given in the text are N series numbers while those enclosed in parentheses are F series numbers.

Connection diagram



Adjustment Procedure

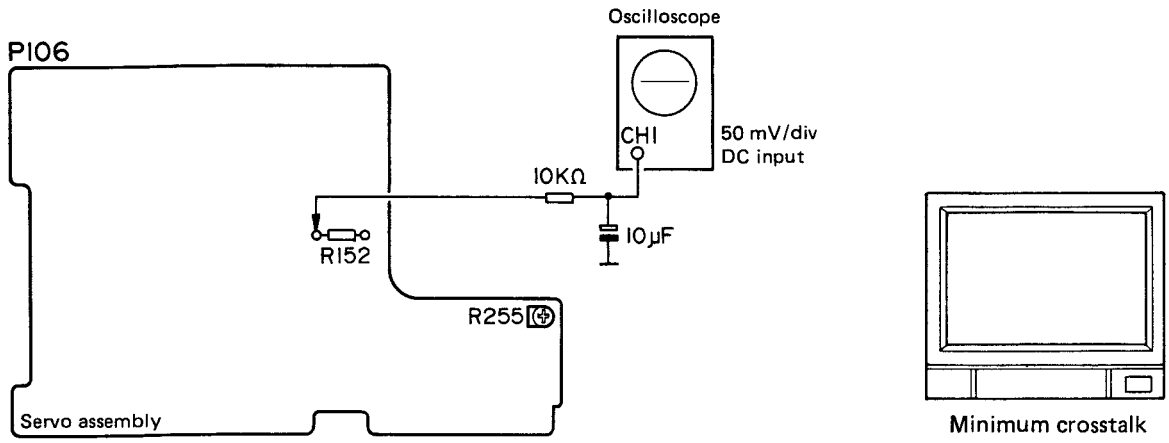
1. Play an LD test disc, and search to frame #313.
2. Turn R255 on the servo assembly board clockwise so that a crosstalk appears on the left side of the monitor screen.
3. Then, turn R255 counterclockwise carefully so that the crosstalk at the left side of the screen becomes minimum, then stop turning. (Pay attention not to exceed the point where the crosstalk is minimum.)

D-2 Tilt levelness check and adjustment

- Purpose: Make the tilt chassis be flat against the non-warped disc.
- Symptoms indicating need for adjustment: When a warped disc is loaded, the distance between the disc and the pickup cover becomes insufficient.

• Measuring instruments and fixtures	• Resistors (10 kΩ) • Capacitor (10 μF) • TV monitor
• Measuring position	• Read of R152 on Servo assembly • Player video output terminals
• Test disc and player mode	• LD test disc #313 and #45,000
• Adjustment position	• Servo assembly P106, Tilt Balance Control (R255)

Connection diagram



Adjustment procedure

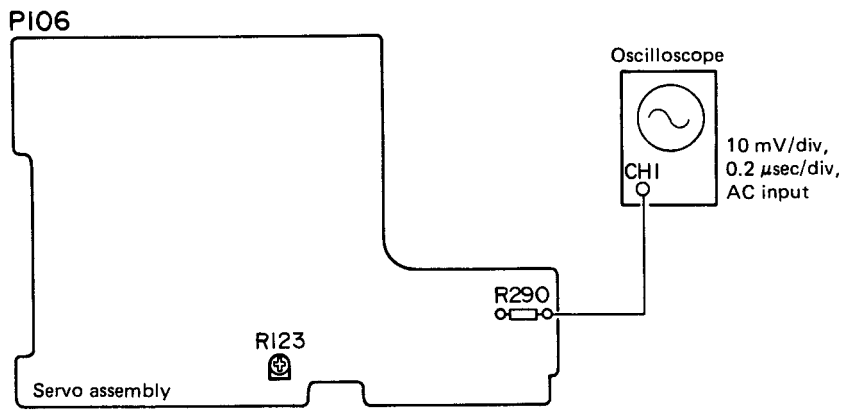
1. Play the LD test disc and search the frame #313. (Check that there is no warp on the disc beforehand.)
2. Connect the resistor, capacitor and an oscilloscope to the lead wire of R152 on the servo assembly board, as shown in the diagram.
3. Measure the DC voltage when the frame #313 is being played.
4. Then search the frame #45,000.
5. At this time, measure the DC voltage and check that the difference from that of #313 is within ±10 mV.
6. If the measured value is out of standard, adjust R255 so that the DC voltage at #45,000 becomes ±10 mV, using the DC voltage at #313 as a reference.
7. Search the frame #313 and check that the crosstalk does not appear on the monitor screen. If the crosstalk appears, perform the operation in item D-1. "Tile Balance Adjustment" again.

D-3 LD Focus (FOCS) Error Balance Adjustment

- Purpose: To ensure that the FOCS servo maintains the objective lens at the optimum distance from disc during LD plaback.
- Symptoms indicating need for adjustment: Crosstalk.

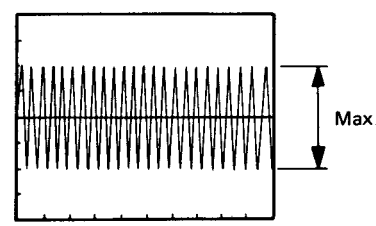
• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• Lead of R290 on Servo assembly (RF signal)
• Test disc and player mode	• LD test disc #15,000 (TRKG servo: closed)
• Adjustment position	• Servo assembly P106, LD Focus Balance Control (R123)

Connection diagram



Adjustment Procedure

1. Play an LD test disc and search to frame #15,000.
2. Connect the oscilloscope to the lead of R290 on the Servo assembly and observe the RF signal.
3. Adjust R123 on the Servo assembly to obtain an RF signal amplitude of maximum. (Fig. 19.)



RF Signal

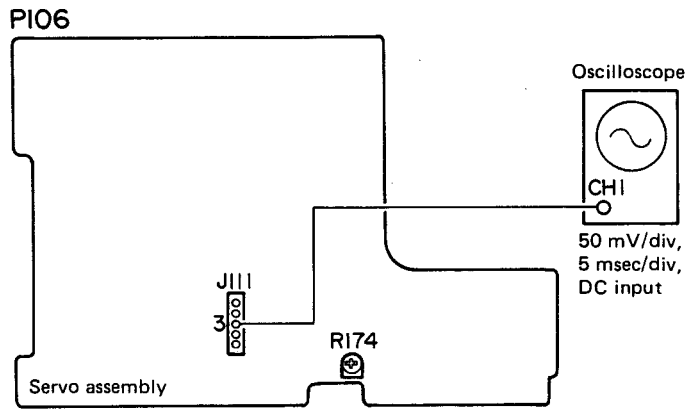
Fig. 19

D-4 Tracking (TRKG) Balance Adjustment

- Purpose: Adjust TRKG servo offset voltage to 0V.
- Symptoms indicating need for adjustment: Improper tracking (Jumping, Skipping etc.)

• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• Servo assembly J111-3 (TRKG error)
• Test disc and player mode	• LD test disc #15,000 • Test mode (TRKG servo open), Refer to "Test Mode Operation".
• Adjustment position	• Servo assembly P106, Tracking Balance Control (R174)

Connection diagrams



Adjustment Procedure

1. Access Test Mode and Play an LD test disc.
2. Press the DISPLAY key to display the frame No. on the TV screen.
3. Move the pick-up to frame #15,000 by scanning or searching using unit's key's.
4. Open the TRKG servo.
5. Connect the oscilloscope to J111-3 of the Servo assembly and observe the waveform.
6. Align the oscilloscope GND with the center of the oscilloscope screen.
7. Adjust R174 in the Servo assembly to a position where the positive and negative halves of the TRKG error waveform are equal. (See Photo 1.)

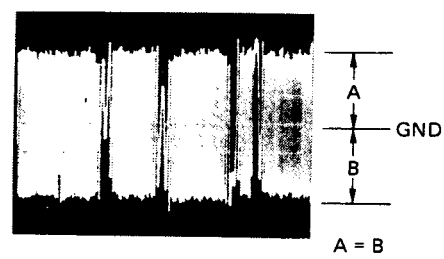


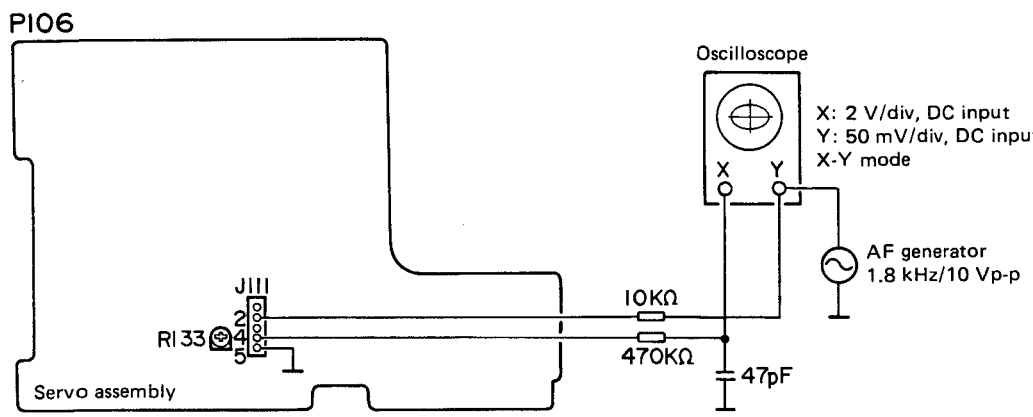
Photo 1.

D-5 FOCS Servo Loop Gain Adjustment

- Purpose: Adjustment of FOCS servo loop gain to the optimum value.
- Symptoms indicating need for adjustment: Degraded playability

• Measuring instruments and fixtures	• Oscilloscope • Resistors (10 kΩ, 470 kΩ) • Capacitor (47 pF) • AF generator
• Measuring position	• Servo assembly J111-4 (FOCS error), J111-2 (FOCS gain)
• Test disc and player mode	• LD test disc #15,000 (TRKG servo: closed)
• Adjustment position	• Servo assembly P106, Focus Gain Control (R133)

Connection diagram



Adjustment Procedure

1. Connect the resistors, capacitor, AF generator and oscilloscope to J111 on the Servo assembly as shown in the diagram.
2. Set the AF generator output to 1.8 kHz/10 Vp-p.
3. Put the oscilloscope into X-Y mode, and observe the Lissajour figures.
4. Adjust R133 on the Servo assembly until the Lissajous figures become symmetrical along the respective X and Y axes of the oscilloscope. (Photo 2.)

   Note: If the disc surface is scratched, the waveforms cannot be read due to noise. Be sure to use a disc which is not damaged.

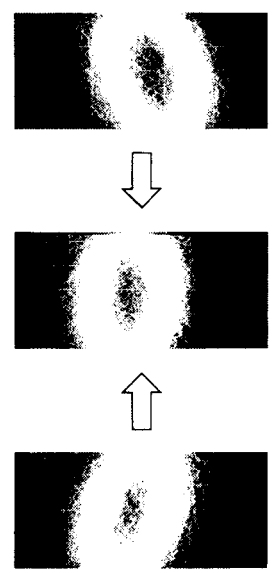


Photo 2.

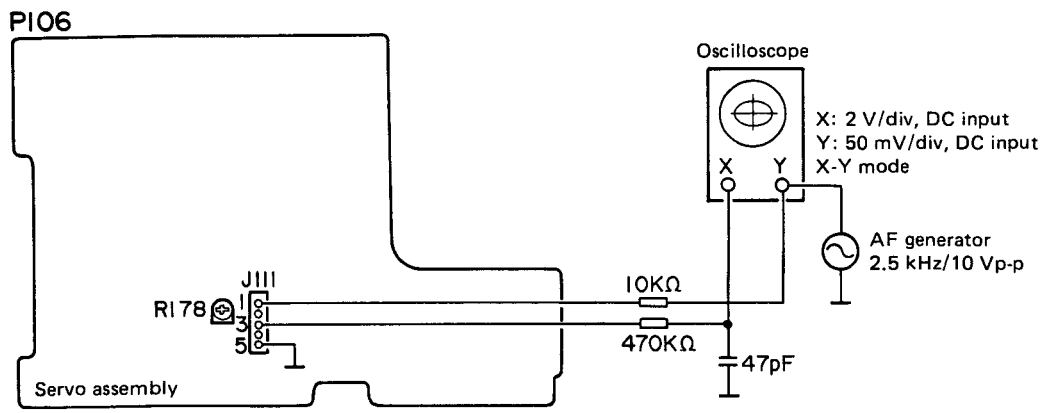
D-6 TRKG Servo Loop Gain Adjustment

- Purpose: Adjustment of TRKG servo loop gain to the optimum value.
- Symptoms indicating need for adjustment: Degraded playability

If the disc surface is scratched, the waveforms cannot be read due to noise. Be sure to use a disc which is not damaged.

• Measuring instruments and fixtures	• Oscilloscope • Resistors (10 kΩ, 470 kΩ) • Capacitor (47 pF) • AF generator
• Measuring position	• Servo assembly J111-1 (TRKG error), J111-3 (TRKG gain)
• Test disc and player mode	• LD test disc #15,000 (TRKG servo: closed)
• Adjustment position	• Servo assembly P106, Tracking Gain Control (R178)

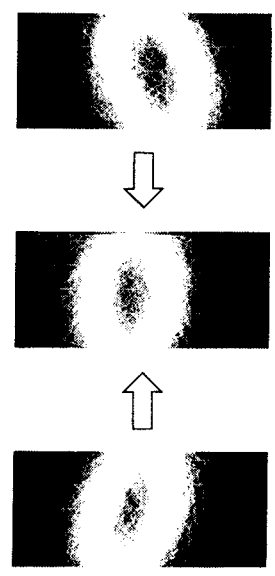
Connection diagram



Adjustment Procedure

1. Play an LD test disc and serch to frame #15,000.
2. Connect the resistor, AF generators, capacitor and oscilloscope to J111 on the Servo assembly as shown in the diagram.
3. Set the AF generator output to 2.5 kHz/10 Vp-p.
4. Put the oscilloscope into X-Y mode, and observe the Lissajous figures.
5. Adjust R178 on the Servo assembly until the Lissajous figures become symmetrical along their respective X and Y axes of the oscilloscope. (Photo 3.)

Note: If the disc surface is scratched, the waveforms cannot be read due to noise. Be sure to use a disc which is not damaged.



Out of adjustment

After adjustment

Out of adjustment

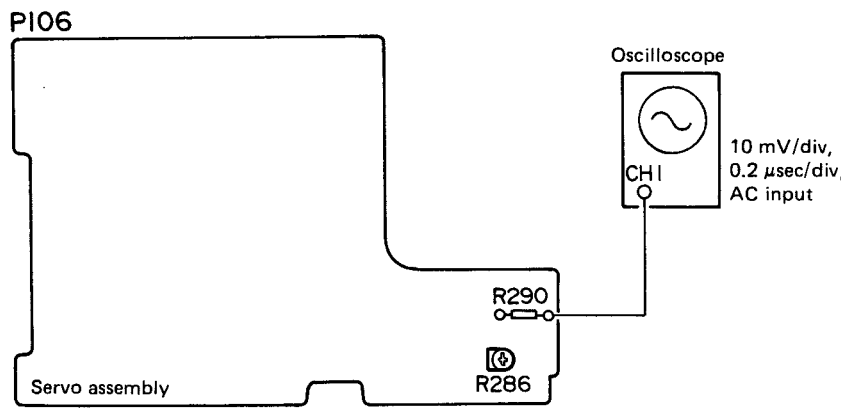
Photo 3.

D-7 RF Gain Adjustment

- Purpose: Adjustment of RF signal amplitude to the optimum value.
- Symptoms indicating need for adjustment: Frequent drop-out

• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• Lead of R290 on Servo assembly (RF signal)
• Test disc and player mode	• LD test disc #15,000 (TRKG servo: closed)
• Adjustment position	• Servo assembly P106, RF Gain Control (R286)

Connection diagram



Adjustment Procedure

1. Play an LD test disc and search to frame #15,000.
2. Connect the oscilloscope to the lead of R290 on the Servo assembly and observe the RF signal.
3. Adjust R286 on the Servo assembly to obtain an RF signal amplitude of 1.2V ± 50 mV. (Fig. 20.)

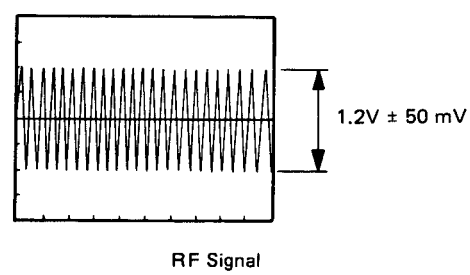


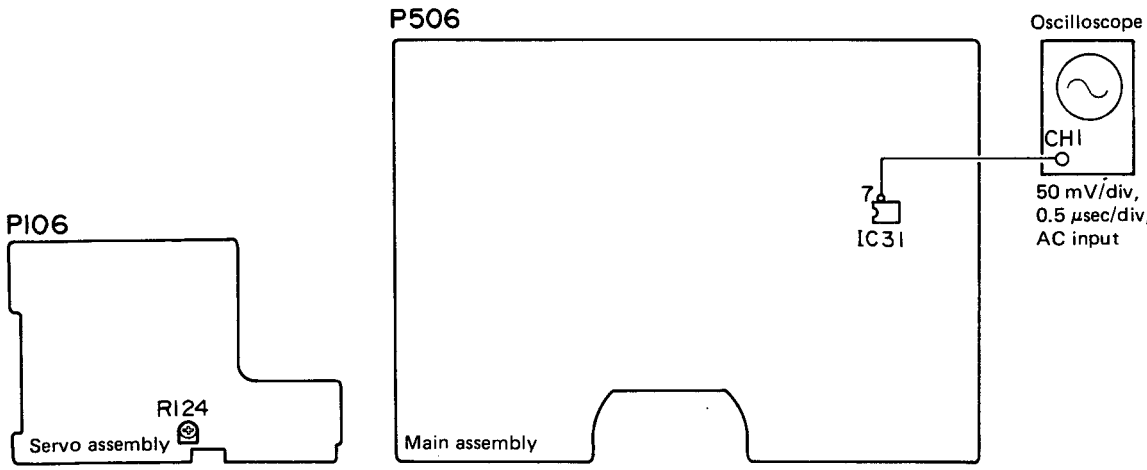
Fig. 20

D-8 CD FOCS Error Balance Adjustment

- Purpose: To ensure that the FOCS maintains the objective lens at the optimum distance from the disc during CD playback.
- Symptoms indicating need for adjustment: Noise in CD playback sound

• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• Main assembly P506, IC31 pin 7
• Test disc and player mode	• CD test disc (Philips 5A)
• Adjustment position	• Servo assembly P106, CD Focus Balance Control (R124)

Connection diagrams



Adjustment Procedure

1. Play a CD test disc.
2. Connect the oscilloscope to pin 7 of IC31 on the Main assembly, and observe the EFM signal (eye pattern).
3. Adjust R124 on the Servo assembly until the EFM signal reaches maximum amplitude. (Photo 4.)

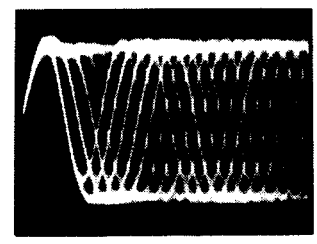


Photo 4. EFM signal

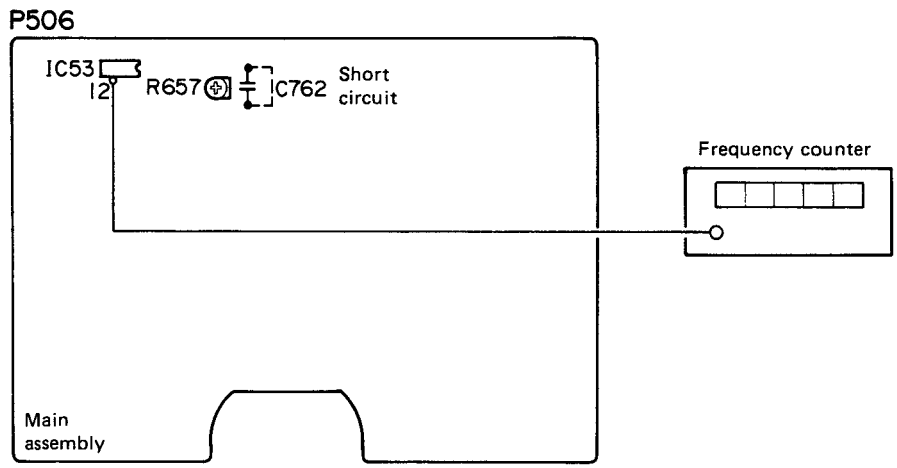
E. MAIN ASSEMBLY ADJUSTMENTS

E-1 VCO Center Frequency Adjustment (Video)

- Purpose: Optimization of the CCD delay time for time base error compensation purposes.
- Symptoms indicating need for adjustment: Color lock failure. Slow color lock after a search.

• Measuring instruments and fixtures	• Frequency counter
• Measuring position	• Main assembly P506, IC53 pin 12
• Test disc and player mode	• Turn ON only the power switch with a shorting across C762.
• Adjustment position	• Main assembly P506, VCO Center Frequency Control (R657)

Connection diagram



Adjustment Procedure

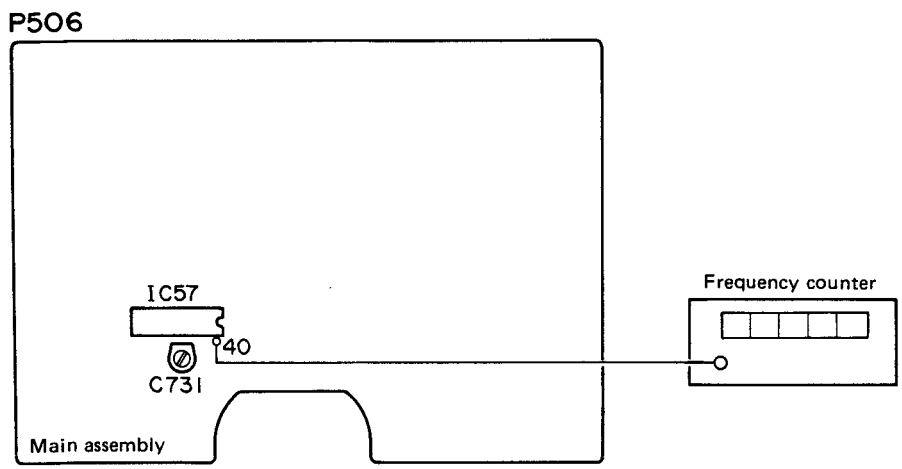
1. Turn ON power only after the shorting jumper across C762 has been installed.
2. Connect a frequency counter to the pin 12 of IC53 on the main assembly.
3. Adjust R657 so that VCO oscillates at 16.6 MHz ±0.3 MHz.
4. Turn OFF the power switch and remove shorting jumper from C762.

E-2 7.50000 MHz Adjustment (Video)

- Purpose: Reference clock frequency adjustment
- Symptoms indicating need for adjustment: Color aberration, spindle servo lock failure

• Measuring instruments and fixtures	• Frequency counter
• Measuring position	• Main assembly P506, IC57 pin 40
• Test disc and player mode	• Switch power on without playing disc.
• Adjustment position	• Main assembly P506, 7.50000 MHz Control (C731)

Connection diagram



Adjustment Procedure

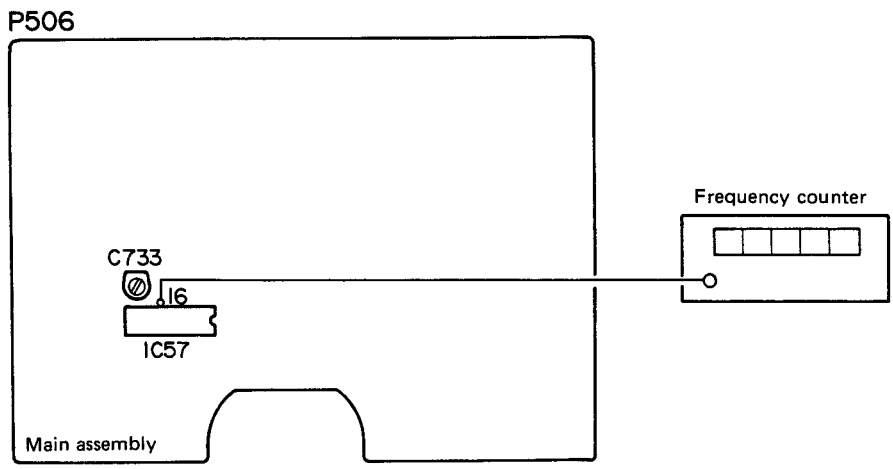
1. Switch the power on, and connect the frequency counter to pin 40 of IC57 on the Main assembly.
2. Adjust C731 on the Video assembly until the reference clock frequency reads 7.50000 MHz ± 10 Hz.

E-3 8.867238 MHz Adjustment (Video)

- Purpose: Reference clock frequency adjustment
- Symptoms indicating need for adjustment: Image not in color

• Measuring instruments and fixtures	• Frequency counter
• Measuring position	• Main assembly P506, IC57 pin 16
• Test disc and player mode	• Switch power on without playing disc.
• Adjustment position	• Main assembly P506, 8.867238 MHz Control (C733)

Connection diagram



Adjustment Procedure

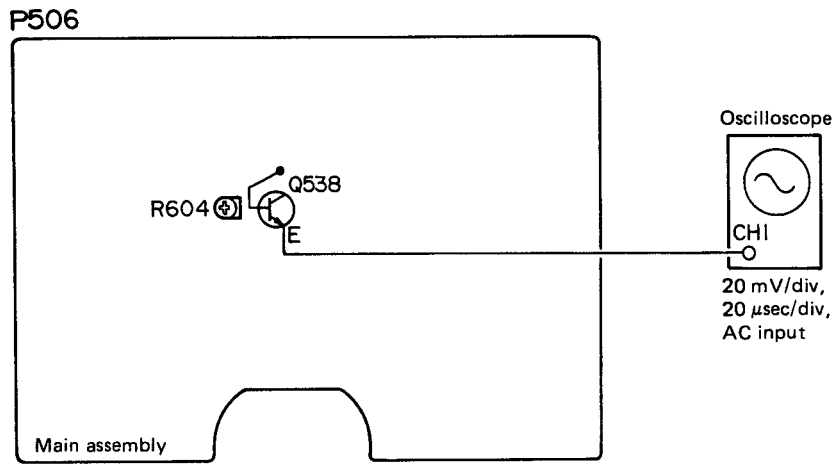
1. Switch the power on, and connect the frequency counter to pin 16 of IC57 on the Main assembly.
2. Adjust C733 on the Video assembly until the reference clock frequency reads 8.867238 MHz ± 10 Hz.

E-4 Playback Video Level Adjustment (Video)

- Purpose: Adjustment of the amplitude of the output video signal (from pedestal to 100% white) to 1.4 Vp-p.
- Symptoms indicating need for adjustment: Impossible to carry out Item F-2 Luminance Amplifier Level Adjustment. Tele-Text malfunctions.

• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• Main assembly Q538 (emitter)
• Test disc and player mode	• LD test disc #1,850
• Adjustment position	• Main assembly P506, Playback Video Level Control (R604)

Connection diagrams



Adjustment Procedure

1. Play an LD test disc and search to frame #1,850.
2. Connect the oscilloscope to the emitter of Q538, and observe the playback video signal waveform.
3. Adjust R604 on the Main assembly until the amplitude from the pedestal level to the white level of the playback video signal waveform reaches 1.4 Vp-p ± 5% (Photo 5.)

Important note:

Never fail to carry out the procedures of Item 2 (Luminance Amplifier Level Adjustment) and the following in RGB ASSEMBLY ADJUSTMENTS when this adjustment has been done.

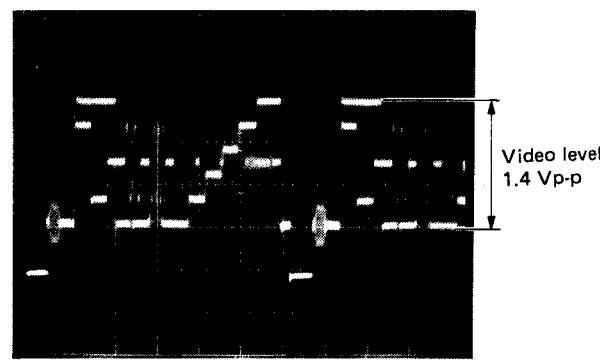


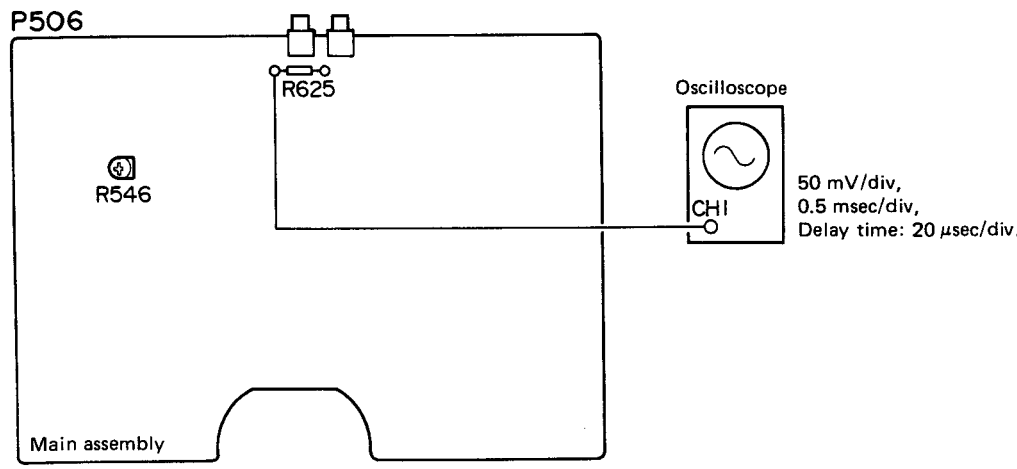
Photo 5.

E-5 1H Delayed Video Level Adjustment (Video)

- Purpose: Adjustment of the amplitude of the 1H delayed video signal to the same amplitude as the main video signal.
- Symptoms indicating need for adjustment: Considerable white drop-out and H displacement (horizontal lines on the screen) when 1H level is large, and considerable black drop-out when 1H level is small.

• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• Main assembly R625
• Test disc and player mode	• LD test disc #23,850
• Adjustment position	• Main assembly P506, 1H Delayed Video Level Control (R546)

Connection diagram



Adjustment Procedure

1. Play an LD test disc and search the frame #23,850.
2. Connect an oscilloscope to R625 and observe the video waveform. In this case, applying a trigger from the V-sync. (TV-V) within the oscilloscope and also using a time delay, seek out the horizontal video signal of which dropout occurs.
3. Adjust R546 so that the amplitude of the dropout video signal becomes as same as that of the video signal without dropout. (Fig. 21)

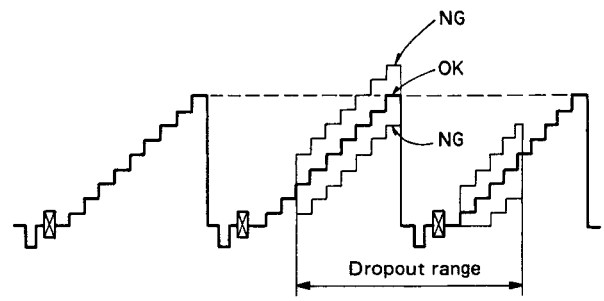


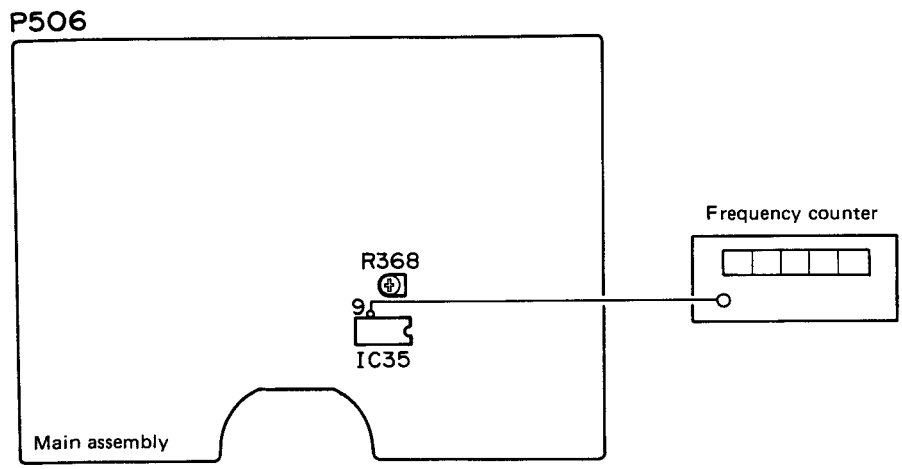
Fig. 21

E-6 VCXO Adjustment (Digital Audio)

- Purpose: Adjusts the CD system clock to 11.2896 MHz.
- Symptoms indicating need for adjustment: Digital sound is interrupted.

• Measuring instruments and fixtures	• Frequency counter.
• Measuring position	• Main assembly IC35 pin 9
• Test disc and player mode	• CD test disc (PHILIPS 5A)
• Adjustment position	• Main assembly P506, VCXO Adjust Control (R368)

Connection diagram



Adjustment Procedure

1. Play the CD (5A).
2. Adjust R368 on the Main assembly to set the reference clock to 11.2896 MHz ± 100 Hz.

F. RGB ASSEMBLY ADJUSTMENTS

IMPORTANT NOTE:

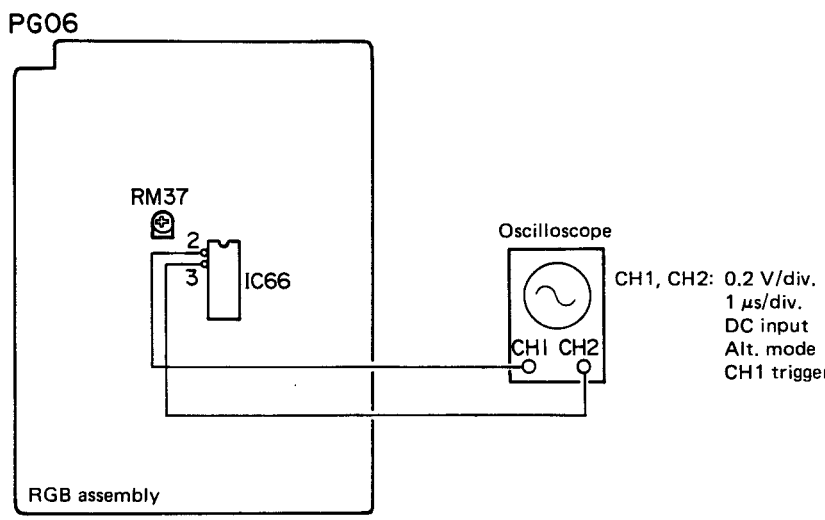
Adjust in the order of Item number. If you carry out the adjustment of an Item, be sure to carry out all the adjustments of the following Items in RGB adjustment.

F-1 BF (burst flag) Position Adjustment

- Purpose: Adjustment of burst flag to color burst position
- Symptoms indicating need for adjustment: Color noise. Image not color.

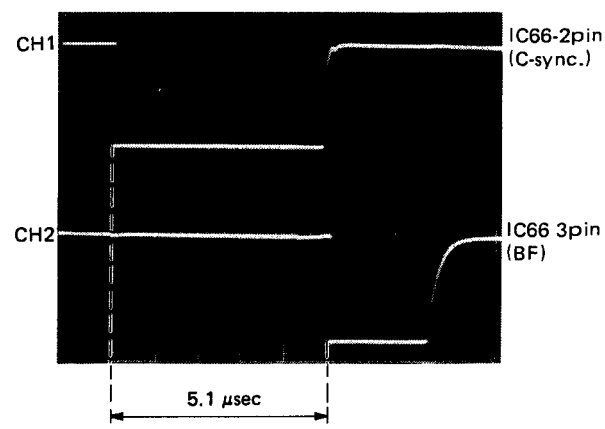
• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• RGB assembly PG06, IC66 pin 2 and pin 3
• Test disc and player mode	• Playing LD disc
• Adjustment position	• RGB assembly PG06, BF Position Control (RM37)

Connection diagram



Adjustment Procedure

1. Play a LD disc.
2. Connect the CH1 of the oscilloscope to the pin 2 (C-sync.) of IC66 and connect the CH2 to the pin 3 (BF) of IC66.
3. Observe both wave forms of CH1 and CH2 simultaneously. Adjust RM37 so that the time length between the point when the C-sync, wave reachs the bottom and the point when the BF wave reaches the bottom is 5.1 μ seconds.

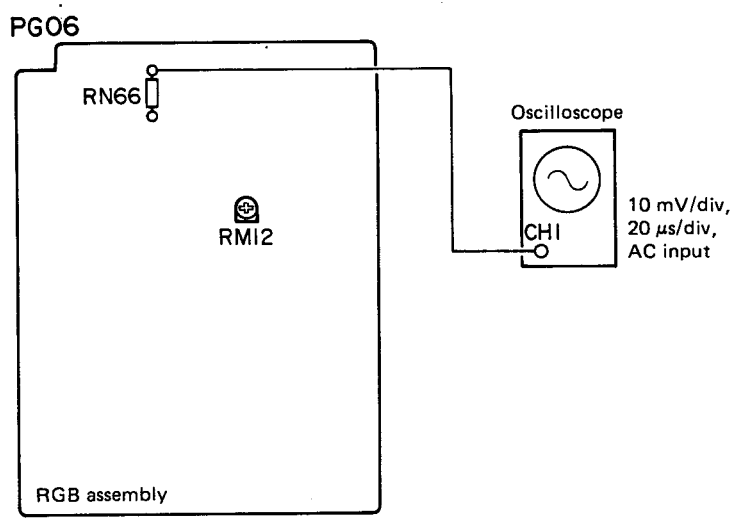


F-2 Luminance Amplifier Level Adjustment

- Purpose: Output level adjustment
- Symptoms indicating need for adjustment: Screen being too dark or too bright.

• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• RGB assembly RN66
• Test disc and player mode	• LD test disc #1200
• Adjustment position	• RGB assembly PG06, Luminance Level Control (RM12)

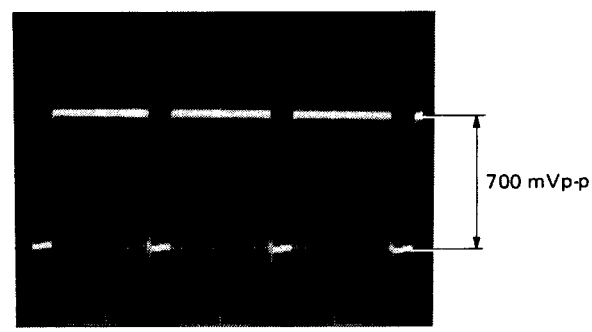
Connection diagram



Adjustment Procedure

1. Play the LD test disc and search for the frame #1200.
2. Connect the oscilloscope to RN66 on RGB assembly. Observe the wave from of R signal.
3. Adjust RM12 on RGB assembly so that the amplitude of R signal during playback is 700 mVp-p ± 0.5%.

Note: The RGB output terminal be connected the monitor TV in which the RGB output terminal is terminated to a 75Ω resistor.
If a monitor TV without RGB terminal is used, terminate the R output terminal (7 pin of JN01) with a 75Ω resistor.

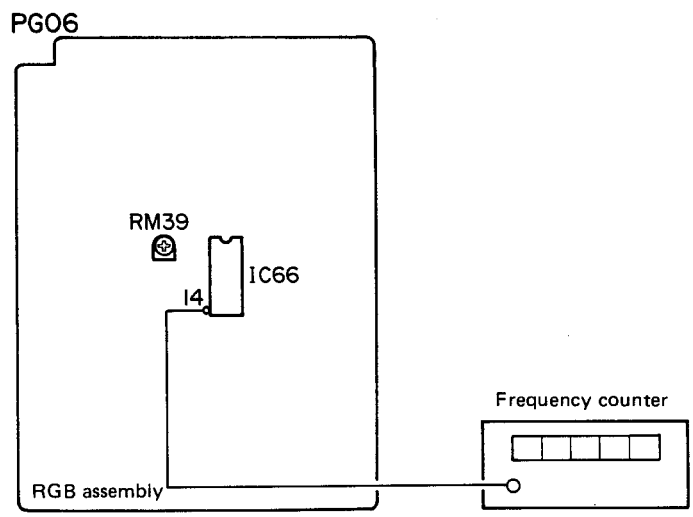


F-3 VCXO Adjustment of RGB Decoder

- Purpose: Adjustment of free-run frequency of RGB decoder
- Symptoms indicating need for adjustment: Color uneven. Coloring difficult after search.

• Measuring instruments and fixtures	• Frequency counter
• Measuring position	• RGB assembly PG06, IC66 pin 14
• Test disc and player mode	• Power ON, but not play
• Adjustment position	• RGB assembly PG06, VCXO Adjust Control (RM39)

Connection diagram



Adjustment Procedure

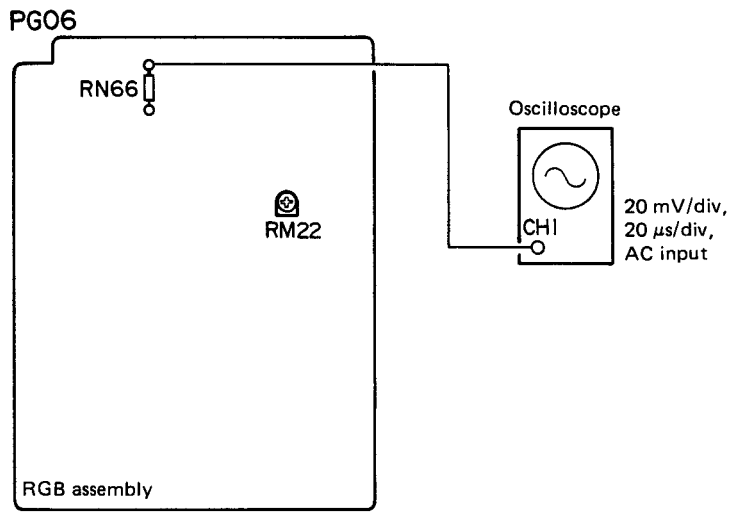
1. Connect the frequency counter to the pin 14 of IC66 on RGB assembly with just the player's power turned on.
2. Adjust RM39 so that the frequency counter reads 4,433600 MHz ± 150 Hz.

F-4 Delay Amplifier Level Adjustment

- Purpose: Adjustment of chroma level output with 1H delay
- Symptoms indicating need for adjustment: Flicker being obvious

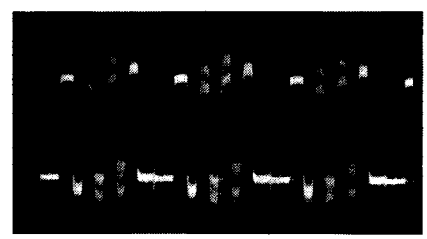
• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• RGB assembly RN66
• Test disc and player mode	• LD test disc #260
• Adjustment position	• RGB assembly PG06, 1H Delay Level Controll(RM22)

Connection diagram

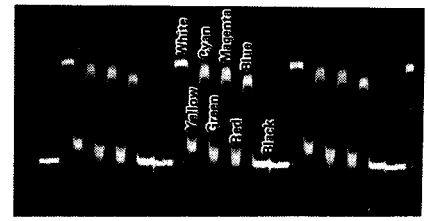


Adjustment Procedure

1. Play the LD test disc and search for the frame #260.
2. Connect the oscilloscope with RN66 on RGB assembly and check the wave form.
3. Adjust RM22 so that the each color amplitude of R signal in playback are in the same form as shown in the right.



Before adjustment



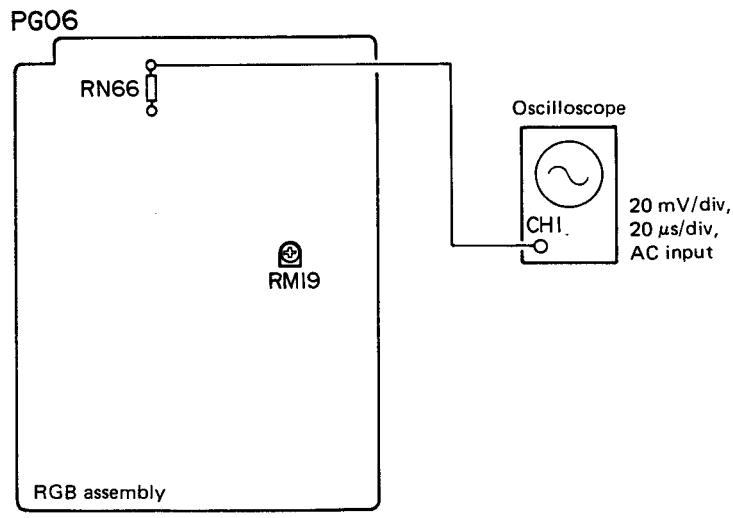
After adjustment

F-5 Chroma Amplifier Level Adjustment

- Purpose: Adjustment of Chroma level
- Symptoms indicating need for adjustment: Color becoming dimmer.

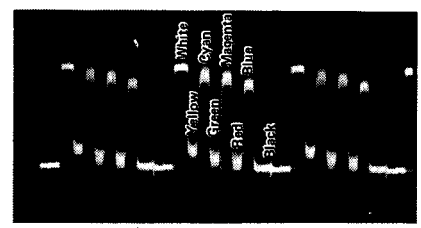
• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• RGB assembly RN66
• Test disc and player mode	• LD test disc #260
• Adjustment position	• RGB assembly PG06, Chroma Level Control (RM19)

Connection diagram

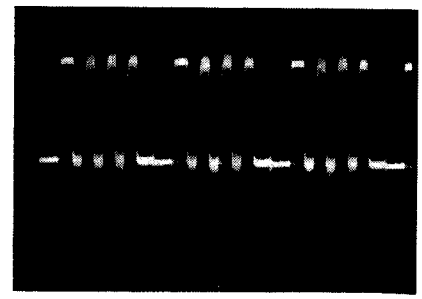


Adjustment Procedure

1. Play the LD test disc and search for the frame #260.
2. Connect the oscilloscope to RN66 on RGB assembly and observe the wave form.
3. Adjust RM19 so that the each color level of R signal in playback is the same.



Before adjustment



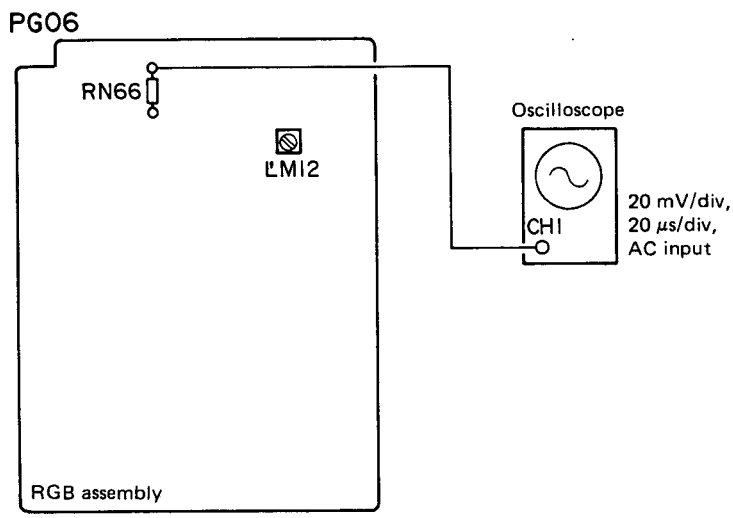
After adjustment

F-6 1H Delay Time Adjustment

- Purpose: Adjustment of 1H delay time
- Symptoms indicating need for adjustment: Jitter being obvious

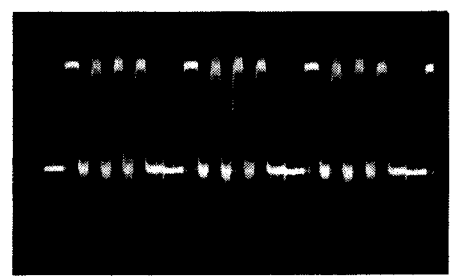
• Measuring instruments and fixtures	• Oscilloscope
• Measuring position	• RGB assembly RN66
• Test disc and player mode	• LD test disc #260
• Adjustment position	• RGB assembly PG06, LM12

Connection diagram



Adjustment Procedure

1. Play the LD test disc and search for the frame #260.
2. Connect the oscilloscope to RN66 on RGB assembly and observe the wave form.
3. Adjust LM12 so that jitter at each color in R signal is minimized.



The amplitude appeared at the top or bottom of each wave form is to be minimized.

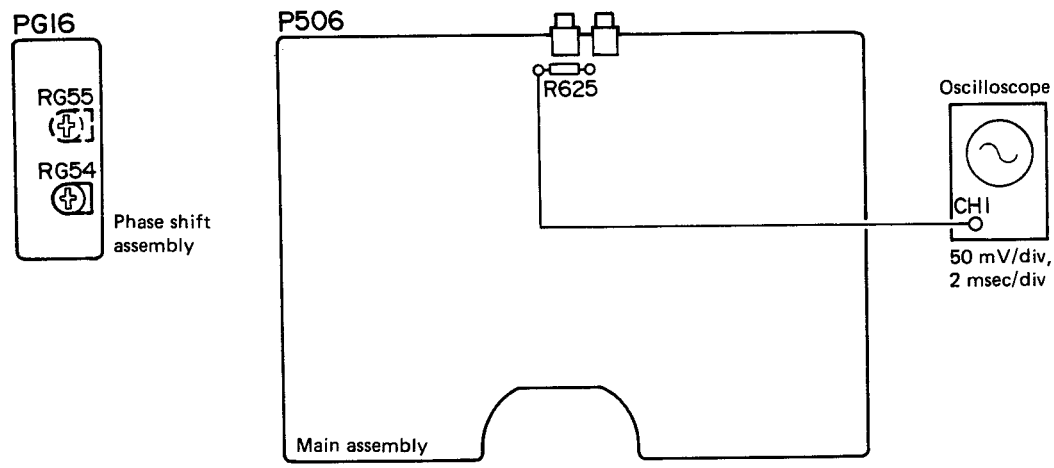
G. PHASE SHIFT ASSEMBLY ADJUSTMENT

G-1 Color Beat (Interference) Cancel Adjustment

- Purpose: Adjusting the delay time of the chroma signal applied to the main video signal.
- Symptoms indicating need for adjustment: Beat (interference) is noticeable in color image.

• Measuring instruments and fixtures	• TV monitor • Oscilloscope
• Measuring position	• Player video output terminal
• Test disc and player mode	• LD test disc #1,100
• Adjustment position	• Phase shift assembly PG16, Delay Time Control (RG54), (RG55)

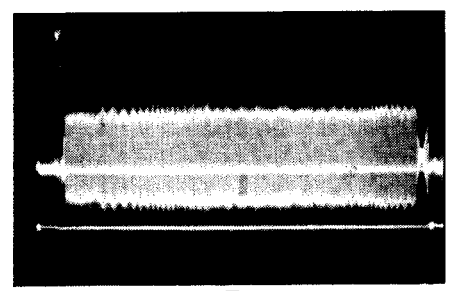
Connection diagram



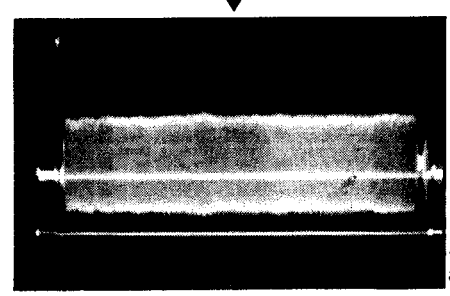
Important note:
When a trimmer resistor is installed in RG55, fully turn the resistor counterclockwise when viewed from the parts side and carry out the following adjustment.

Adjustment Procedure

1. Play an LD test disc and search to frame #1,100.
2. Connect an oscilloscope to R625 on the Main assembly and trigger with the V-sync.
3. Adjust RG54 in the Phase shift assembly so that the V-sweep waveform displayed in the oscilloscope becomes float.



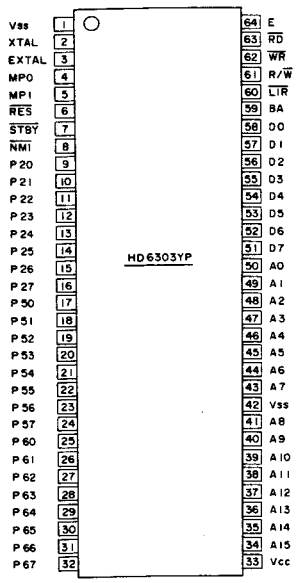
Before adjustment

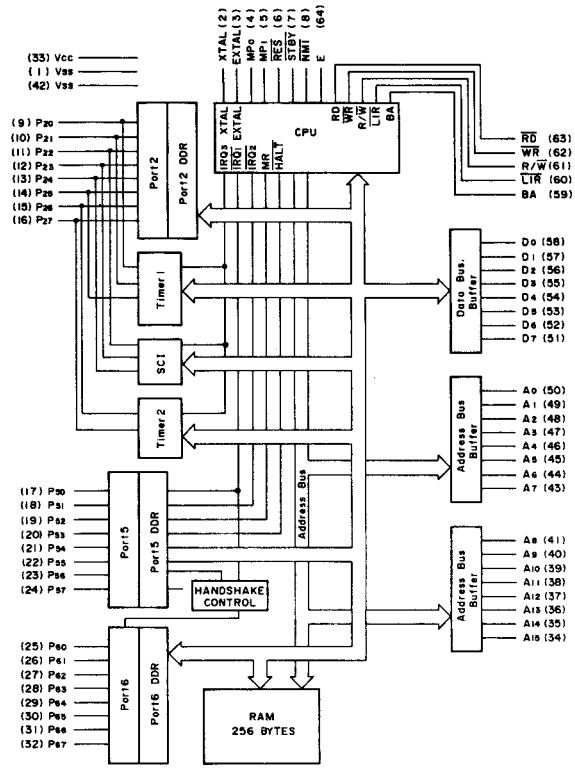


After adjustment

VI. μ-COM DATA

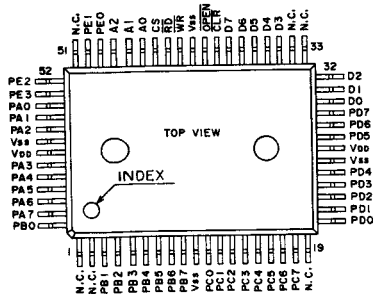
IC84: HD6303YP
(8 bit μ-COM)

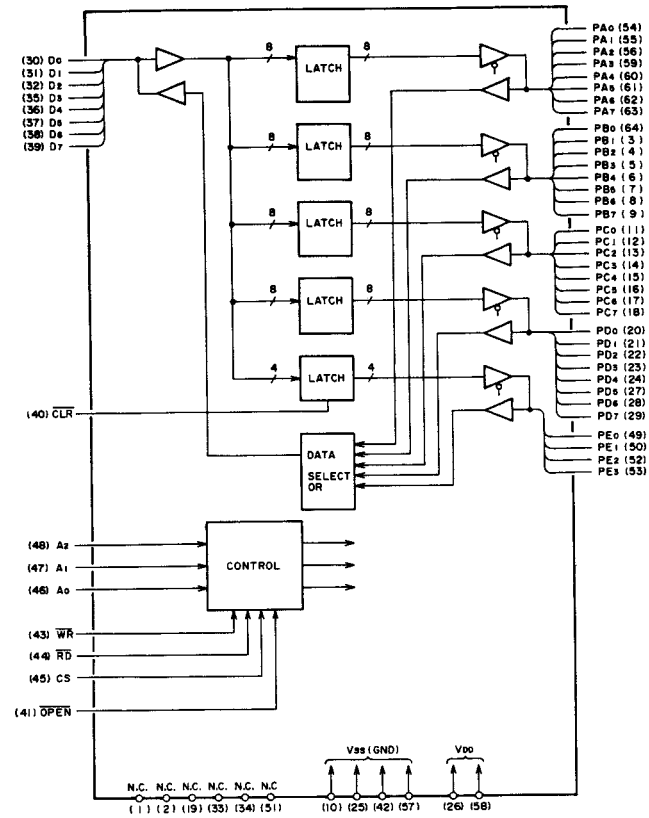




Pin No.	Pin Name	I/O	Function	Pin No.	Pin Name	I/O	Function
1	VSS	–	GND	33	VCC	–	+5V
2	XTAL	–	Clock (4 MHz)	34	A15	O	Address
3	EXTAL	I		35	A14	O	
4	MP0	I	+5V	36	A13	O	
5	MP1	I	0V	37	A12	O	
6	$\overline{RES}$	I	Reset	38	A11	O	
7	$\overline{STBY}$	I	+5V	39	A10	O	
8	$\overline{NMI}$	I		40	A9	O	
9	P20 ($\overline{FLOCK}$)	I	Focus Lock	41	A8	O	
10	P21 ($\overline{CD}$)	O	LD/CD Select	42	VSS	–	GND
11	P22 (SCLK)	O	Serial Data Clock	43	A7	O	Address
12	P23 ($\overline{SDATAIN}$)	I	Serial Data Input	44	A6	O	
13	P24 ($\overline{SDATAOUT}$)	O	Serial Data Output	45	A5	O	
14	P25 ($\overline{LDON}$)	O	Laser Diode ON/OFF	46	A4	O	
15	P26 (FTS SCAN)	O	FTS Scanning	47	A3	O	
16	P27 (T-CROSS)	I	Tracking Cross	48	A2	O	
17	P50 (V-SYNC)	I	Vertical Synchronization	49	A1	O	
18	P51 (FG)	I	Spindle Frequency Generator	50	A0	O	
19	P52 (JTRG)	O	Jump Trigger	51	D7	I/O	Expander Data Bus
20	P53 ($\overline{STB2}$)	O	Strobe 2	52	D6	I/O	
21	P54 ($\overline{ACK}$)	I	Acknowledge	53	D5	I/O	
22	P55 ($\overline{IRQ}$)	I	Interrupt Request	54	D4	I/O	
23	P56 (SCOR)	I	Sub Code Sync.	55	D3	I/O	
24	P57 ($\overline{ATN2}$)	I	Attention 2	56	D2	I/O	
25	P60 (D0)	I/O	μ-Com. Data Bus	57	D1	I/O	
26	P61 (D1)	I/O		58	D0	I/O	
27	P62 (D2)	I/O		59	BA	–	Not Used
28	P63 (D3)	I/O		60	$\overline{LIR}$	–	Not Used
29	P64 (D4)	I/O		61	R/$\overline{W}$	O	Read/Write
30	P65 (D5)	I/O		62	$\overline{WR}$	O	Write
31	P66 ($\overline{STB1}$)	O	Strobe 1	63	$\overline{RD}$	–	Not Used
32	P67 ($\overline{ATN1}$)	O	Attention 1	64	E	O	System Clock

IC83: CXD1095Q
(Expander)

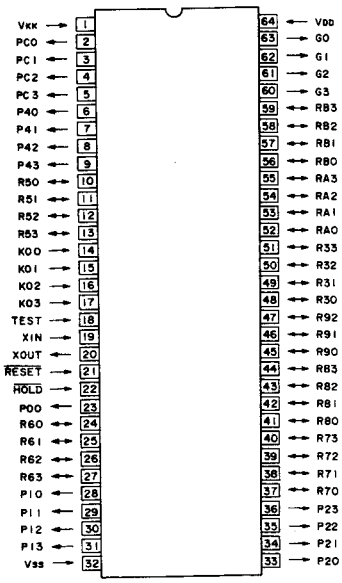


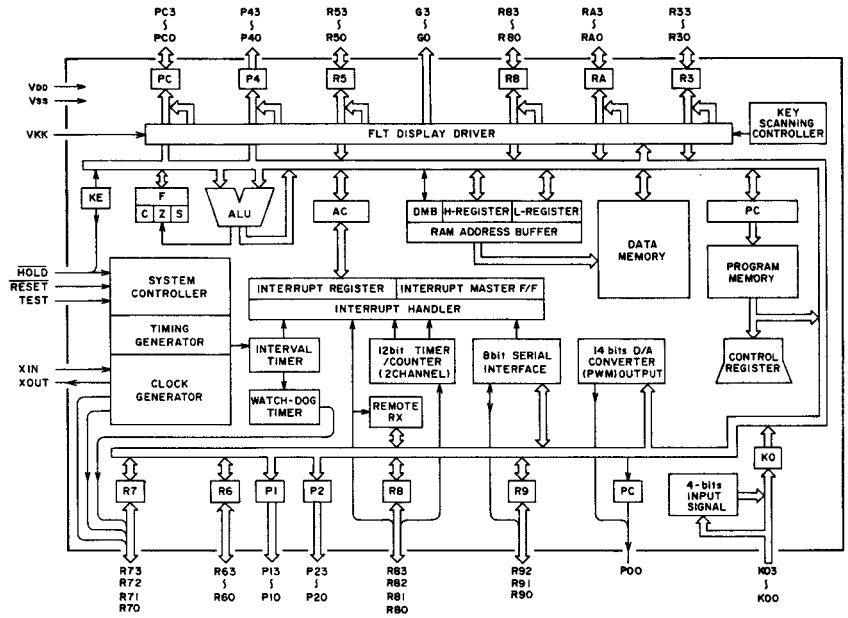


Pin No.	Pin Name	I/O	Function
1	N.C.	–	Not Used
2	N.C.	–	Not Used
3	PB1 (ROTC1)	O	Rotary Encoder Control 1
4	PB2	–	Not Used
5	PB3 (MOTRES)	O	Motor Reset
6	PB4	–	Not Used
7	PB5 (CHRSTB)	O	Character Strobe
8	PB6 (INTVID)	O	Internal Video
9	PB7	–	Not Used
10	VSS (GND)	–	GND
11	PC0 (LMOT1)	O	Loading Motor Control 1
12	PC1 (LMOT2)	O	Loading Motor Control 2
13	PC2 ($\overline{CX}$)	O	CX ON/OFF
14	PC3	–	Not Used
15	PC4	–	
16	PC5	–	
17	PC6	–	
18	PC7	–	
19	N.C.	–	
20	PD0	–	
21	PD1	–	
22	PD2	–	
23	PD3	–	
24	PD4	–	Not Used
25	VSS	–	GND
26	VDD	–	+5V
27	PD5 (CDV)	O	CDV Select
28	PD6 (S/$\overline{P}$)	O	Search/Play Select
29	PD7	–	Not Used
30	D0	I/O	Expander Data Bus
31	D1	I/O	
32	D2	I/O	

Pin No.	Pin Name	I/O	Function
33	N.C.	–	Not Used
34	N.C.	–	
35	D3	I/O	Expander Data Bus
36	D4	I/O	
37	D5	I/O	
38	D6	I/O	
39	D7	I/O	
40	$\overline{CLR}$ (VDD)	–	+5V
41	$\overline{OPEN}$ ($\overline{RES}$)	I	Reset
42	VSS	–	GND
43	$\overline{WR}$	I	Write
44	$\overline{RD}$	I	Read
45	CS	I	Chip Select
46	A0	I	Address
47	A1	I	
48	A2	I	
49	PE0 (CAV/$\overline{CLV}$)	O	CAV/CLV Select
50	PE1 (LATCH)	O	Latch
51	N.C.	–	Not Used
52	PE2 (RNW)	O	Read/Write Select
53	PE3 (ERF)	I	Error Flag
54	PA0 (POS1)	I	Position Sensor 1
55	PA1 (POS2)	I	Position Sensor 2
56	PA2	–	Not Used
57	VSS	–	GND
58	VDD	–	+5V
59	PA3 (PARK)	I	Park Switch Input
60	PA4 (ROTB)	I	Rotary Encoder Input B
61	PA5 (ROTA)	I	Rotary Encoder Input A
62	PA6 (CHRBUSY)	I	Character Busy
63	PA7 (DSENS)	I	Disc Sensor Input
64	PB0 (ROTC2)	O	Rotary Encoder Control 2

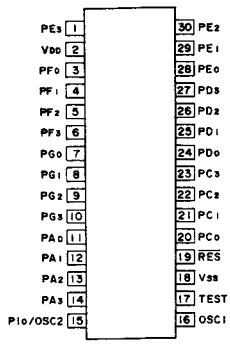
IC99: TMP47C670
(4 bit μ-COM)

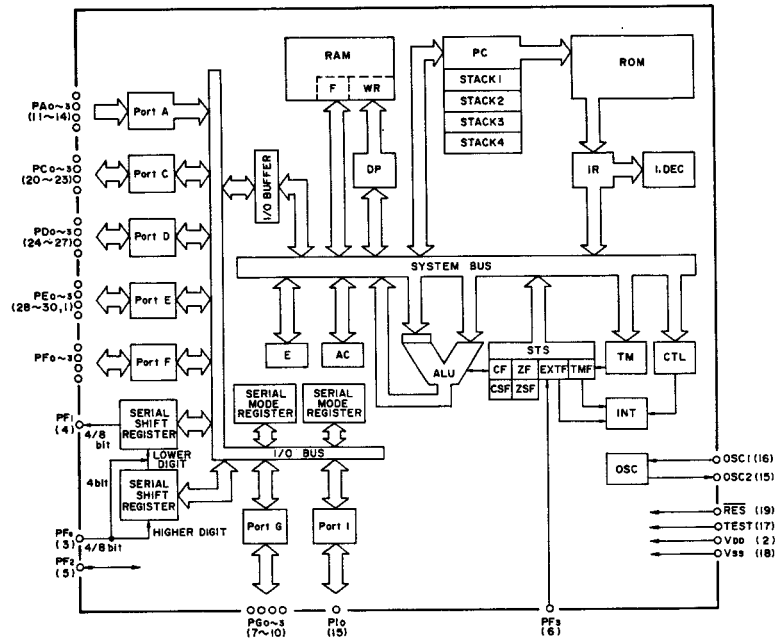




Pin No.	Pin Name	I/O	Function	Pin No.	Pin Name	I/O	Function
1	VKK	–	−33V	33	P20	O	Key Out 3
2	PC0	O	Segment a	34	P21	O	Key Out 2
3	PC1	O	Segment b	35	P22	O	Key Out 1
4	PC2	O	Segment c	36	P23	O	Key Out 0
5	PC3	O	Segment d	37	R70	O	Power Standby
6	P40	O	Segment e	38	R71 ($\overline{WT0}$)	O	Watch-dog
7	P41	O	Segment f	39	R72	I/O	D4 | μ-Com. Data Bus
8	P42	O	Segment g	40	R73	I/O	D5 | μ-Com. Data Bus
9	P43	O	Segment h	41	R80	I	IR Receiver
10	R50	O	Segment i	42	R81	I	FTD Select
11	R51	–	Not Used	43	R82	–	Not Used
12	R52	I	FTD Select	44	R83	I	Mode Select
13	R53	I	FTS Select	45	R90	–	Not Used
14	K00	I	Key in 0	46	R91	–	Not Used
15	K01	I	Key in 1	47	R92	–	Not Used
16	K02	I	Key in 2	48	R30	O	Acknowledge
17	K03	I	Key in 3	49	R31	I	Strobe 2
18	TEST	I	Test	50	R32	I	Attention 2
19	XIN	I	X'tal In	51	R33	O	Grid 1
20	XOUT	O	X'tal Out	52	RA0	O	Grid 1
21	$\overline{RESET}$	I	Reset	53	RA1	O	Grid 4
22	$\overline{HOLD}$	–	Not Used	54	RA2	O	Grid 2
23	P00	O	Reset-U (Main μ-Com.)	55	RA3	O	Grid 3
24	R60	I/O	D0 | μ-Com. Data Bus	56	RB0	–	Not Used
25	R61	I/O	D1 | μ-Com. Data Bus	57	RB1	O	Grid 5
26	R62	I/O	D2 | μ-Com. Data Bus	58	RB2	O	Grid 6
27	R63	I/O	D3 | μ-Com. Data Bus	59	RB3	–	Not Used
28	P10	O	Key Out 4	60	G3	O	Grid 9
29	P11	O	Key Out 5	61	G2	O	Grid 8
30	P12	O	Key Out 6	62	G1	O	Grid 7
31	P13	O	Key Out 7	63	G0	–	Not Used
32	VSS	–	GND	64	VDD	–	+5V

IC36: LC6543H
(4 bit μ-COM)





Pin No.	Pin Name	I/O	Function	Pin No.	Pin Name	I/O	Function
1	PE3 (SCOR)	O	Sub Code Sync.	16	OSC1	I	X'tal In
2	VDD	–	+5V	17	TEST	–	Not Used
3	PF0 (QDATA)	I	Q-Data	18	VSS	–	GND
4	PF1 (QRA)	I/O	Q-ch. Request and ACK	19	$\overline{RES}$	I	Reset
5	PF2 (QCL)	O	Q-clock	20	PC0	–	Not Used
6	PF3 ($\overline{ATN2}$)	I	Attention 2	21	PC1 ($\overline{ACK}$)	O	Acknowledge
7	PG0 (D0)	I/O	μ-Com. Data Bus	22	PC2	–	Not Used
8	PG1 (D1)	I/O		23	PC3 ($\overline{STB2}$)	I	Strobe 2
9	PG2 (D2)	I/O		24	PD0 (A/$\overline{D}$)	O	Analog/Digital Select
10	PG3 (D3)	I/O		25	PD1 (RSEL)	O	R-ch Select
11	PA0 (D4)	I/O		26	PD2 (LSEL)	O	L-ch Select
12	PA1 (D5)	I/O		27	PD3 (LD/$\overline{CD}$)	O	LD/CD Select
13	PA2 ($\overline{CRI}$)	O	Counter Reset Inhibit	28	PE0 (MUTE)	O	Mute
14	PA3 ($\overline{SSM}$)	O	Start/Stop Motor Input	29	PE1 ($\overline{ATT}$)	O	Attention
15	PI0/OSC2	O	X'tal Out	30	PE2 (CDROM)	O	CD-ROM

VII. ABBREVIATION LIST

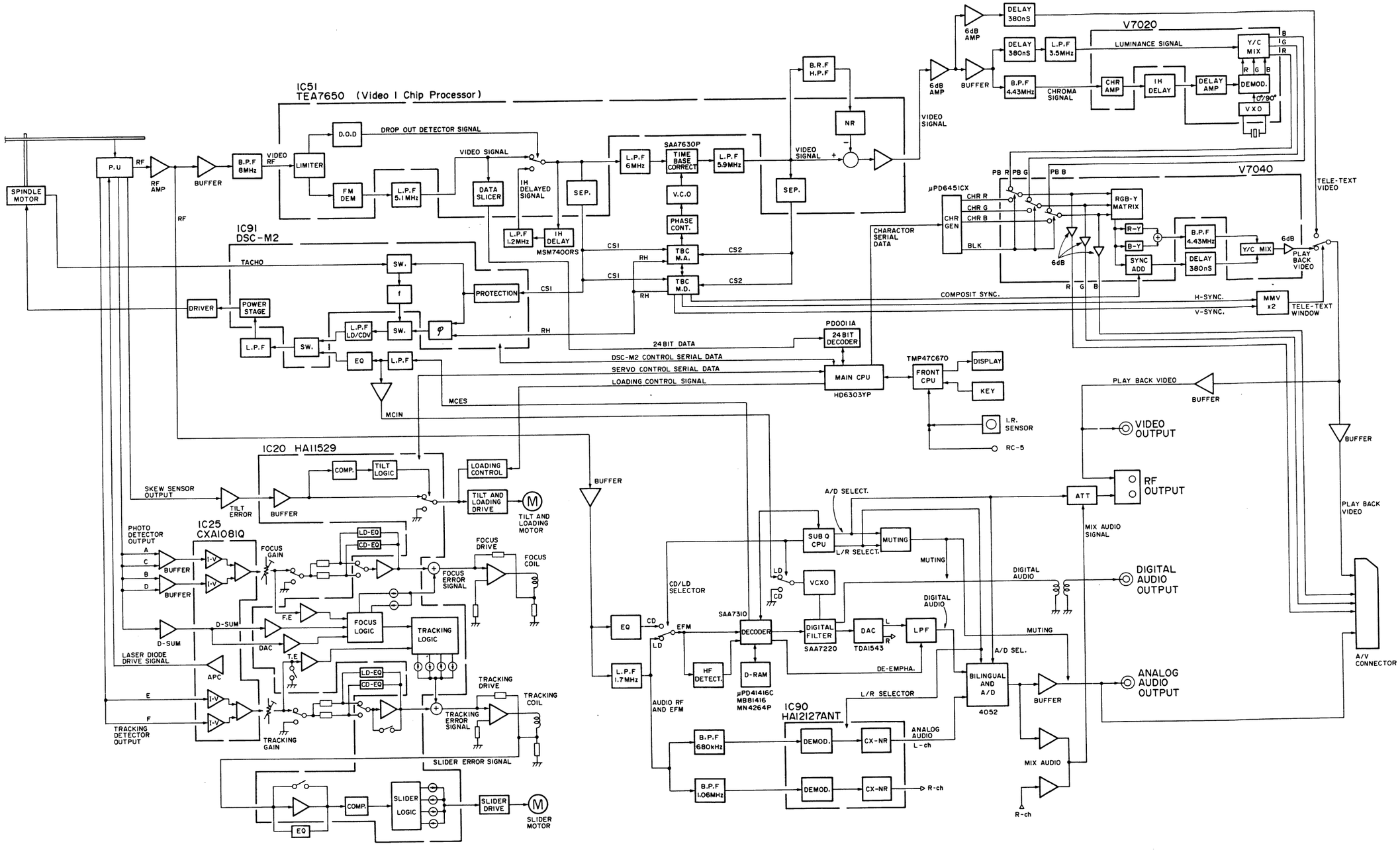
24DATA	24-bits Data
A/D	Analog/Digital Select
A-AUDIO	Analog Audio
AC	Accumulator
ACC	Automatic Color Control
ACK	Acknowledge
ACK	Automatic Color Killer
ADD, SUB SW	Addition, Subtraction Switch
ALT PLS	Line Alternate Pulse
AM	Additional Mute
ANTSW	Antenna Switch
AOL	L-ch Output
AOR	R-ch Output
APC	Automatic Power Controller
APC	Automatic Phase Control
ASY	Automatic Asymmetry Control
ATN	Attention
ATSB	Attenuation
ATT	Attenuate
B.P.F	Band-pass Filter
B.R.F	Band-rejection Filter
B&W	Black & White
BA	Bus Available
BCK	Bit Clock
BF	Burst Flag
BINPC	Input a B Color Signal from Personal Computer
BINTV	Input a B Color Signal from TV
BLK PLS	Blanking Pulse
BO	Data Bus
BSET	Brake Current Setting
BULDET	Burst Limiter and Detector
BUS CON	Bus Control
C IN (OUT)	Chroma Signal Input (Output)
C SYNC	Composite Sync.
CAS	Column Address Select
CAV	Constant Angular Velocity
CAV/CLV	CAV/CLV Select
CB	Color Burst
CCD 453 ST	CCD 453 Stage
CD	Compact Disc
CD/LD	CD/LD Select
CDO	Capacitor Down
CDROM	CD-ROM
CDV	Compact Disc Video
CE	Chip Enable
CHR SEP	Chroma Separator
CHRBUSY	Character Busy
CHRCLK	Character Generator Clock
CHRDAT	Character Data
CHRDATA	Character Data
CHROUT	Chroma Output
CHRSTB	Character Strobe
CIRC	Cross-Interleaved Reed-Solomon Code
CLAB	Clock
CLBD	Clock
CLK	Clock Input
CLP	Clamp
CLR	Clear
CLV	Constant Linear Velocity
COMP	Clock Duty Defect
COMP.	Comparator
COMPAR	Comparator
CPU	Central Processing Unit
CRI	Counter Reset Inhibit
CS	Chip Select
CSI	Composite Sync.
CSYNC	Composite Sync.
CTL	Control Register
CUP	Capacitor Up
CV	Composite Video Signal
CVBS	Composite Video Burst Signal
CWB1,2	External Loop Filter
CX	CX Noise Reduction
CX-NR	CX Noise Reduction
D.O.D	Drop-out Detector
D-OUT	Digital Output
D-RAM	Dynamic Random Access Memory
D-SUM	Detector Sum Level
D1,2	2-bits Setting for The Commutation Block
DAAB	Data
DABD	Data
DAC	Detector Sum AC
DAN	Drive-A, Negative
DAP	Drive-A, Positive
DATA REQ	24-bits Data Request
DBN	Drive-B, Negative
DBP	Drive-B, Positive
DDR	Data Direction Register
DEEM	De-emphasis Output
DEM	Demodulator
DEMO L	L-Channel Demodulator
DEMO R	R-Channel Demodulator
DEMOD	Demodulator
DET	Detector
DIN	Serial Data Input
DINT	Data Interpolated Input
DL AMP	Delay Line Amp.
DLA IN	Delay Line Amp. Input
DOB	Drop-out Not Input
DOS	Drop-out Sense
DOUT	Data Output
DP	Data Pointer
DREQ	Data Request
DRQ	24-bits Data Request
DSENSE	Disc Sensor Input
E	System Clock
E	E-Register
EFAB	Error Flag
EFAS	Error Flag A-Chip (Decoder) to Servo
EFL	Enable Frequency Loop
EFM	8-14 Modulation
EI	E-Amp. Input
EO	E-Amp. Output
EQ	Equalizer
ERF	Error Flag
ESTOP	Emergency Stop
ETL	Enable Tacho Loop
EXTAL	External Clock Input
F44	Clock Output (f-sub)
F75	Clock Input (7.5MHz)
F75	System Clock
F88	Clock Output (2 x f-sub)
FB	Feedback
FCD	Focus Error Amp. CD Input
FE	Focus Error
FEBIAS	Focus Error Bias
FEG	Focus Error Gain Amp. Input
FEGA	Focus Error Gain Amp. Output
FF	Flip Flop
FG	Spindle Frequency Generator
FIAT	Burst Fiat
FL	Focus Lock
FLD	Focus Error Amp. LD Input

FLOCK	Focus Lock
FM DEM	FM Demodulator
FOCS	Focus
FOCS-D	Focus Drive
FOCS-R	Focus Return
FOK	Focus OK
FOST	Focus Error Amp. Offset Adjust
FPO	Focus OP-Amp. Output
FTD	Fluorescent Tube Display
FTSSCAN	FTS (Favorite Track Selection) Scanning
f	Frequency
G0 – 12	Digit 0 – 12
GEN	Generator
GINPC	Input a G Color Signal from Personal Computer
GINTV	Input a G Color Signal from TV
H PLS	Horizontal Pulse
H.P.F	High-pass Filter
H-SYNC	Horizontal Synchronizing Signal
HALF PICT	Half Picture
HALL A (B,C)	Input from Hall Motor
HFD	High-Frequency Detector
HFI	High-Frequency Input
HOR	Horizontal Sync.
I/O	Input/Output
I-V	Current/Voltage Converter
INIT	Reset Input
INJ	Injection Current Setting
INSW	Inside Switch
INT	Interrupt
INTVID	Internal Video
INV	Inverter
IR SENSOR	Infrared Sensor
IREF	Current Reference
IRQ	Interrupt Request
ISET	Internal Current Setting
J-TRG	Jump Trigger
JUMP	Jump Trigger Input
KEYIN0	Key In, 0
L.P.F	Low-pass Filter
L-MOT	Loading Motor Control
LD	Laser Diode
LD	Laser Disc
LDON	Laser Diode ON/OFF
LE	Latch Enable
LIM	Limiter
LIR	Load Instruction Register
LSEL	Left Channel Select
M.A	Measurement Analog
M.D	Measurement Digital
MCES	Motor Control Error Signal
MCIN	Motor Control Error Signal Input
MECHA SW	Mechanism Switch
MEPIB	Measurement Point In The Burst
MFE	Motor Frequency Error
MH	Protected Horizontal Sync.
MIRR	Mirror Comparator Output
MIX-A	Mix Audio Signal
MIXAUD	Mix Audio Signal
MOTRES	Motor Reset
MP0	Mode Program 0
MP1	Mode Program 1
MPE	Motor Phase Error
MPLL	Motor in Frequency Control Range
MS	Multi-Standard Input
MSC	Motor Speed Control
MTF	Modulation Transfer Function
MUSB	Mute
MV	Protected Vertical Sync.
NR	Noise Reduction
NT/PAL	NTSC/PAL
O.S.D	On-screen Display
OC	Oscillator Control Input
ODEN	Output Disable
OE	Output Enable
OSC	Oscillator
OSP	Over Speed Detection
OUTM	Comparator 3 Output
OUTP	Comparator 2 Output
P.U	Pickup
P/B DOBM	Digital Audio Output
P/N	P-Sub/N-Sub for Laser Diode
P/N	PAL/NTSC
P/S	Play/Still
PARK	Park Switch Input
PC	Personal Computer
PD	Photo Diode
PD	Phase Detector Output
PHLOCK	Phase Lock
PLN	PAL/NTSC Selection Input
PLN	PAL/NTSC Selection
PLOCK	Phase Locked Loop
PLOCK	Motor Phase Lock Signal
POS	Position Sensor
POSCNT	Position Control
POWSTB	Power Stand-by
PR1 – 4	Tacho Pulse Divider
PRE-FIFO	Pre Fast In Fast Out
PRES	Preset
PWM	Pulse Width Modulation
Q-DATA	Q-Channel Data
QCL	Q-Channel Clock
QRA	Q-Channel Request Input/Acknowledge Output
R/W	Read/Write Select
R/W	Read/Write
RAMP	Adjust for Ramp of Up-Down Signal
RAS	Row Address Select
RC DECODE	Remote Control Code Decode
RD	Read
REF0 – 6	7-bits Reference Rotation Speed
REFN	Reference Selection
REG	Regulator
RESETu	Reset of u-processor
REV	Reverse Speed Detection
RF-	RF Summing Amp.-Input
RF0	RF Summing Amp. Output
RFA	RF (Audio)
RFAV	RF (Audio/Video)
RH	Reference Horizontal
RH1	Horizontal Line Video Reference Signal
RINPC	Input an R Color Signal from Personal Computer
RINTV	Input an R Color Signal from TV
RLS	Radial Loop Switch
RNW	Read/Write Select
ROM	Read Only Memory
ROTA	Rotary Encoder Input A
ROTB	Rotary Encoder Input B
ROTC	Rotary Encoder Control
RSEL	Right Channel Select
RST	Reset
S/H	Sawtooth and Sample and Hold
S/P	Still/Play
S-COMP	Slider Comparator
S-TERMINAL	Super Video Output Terminal

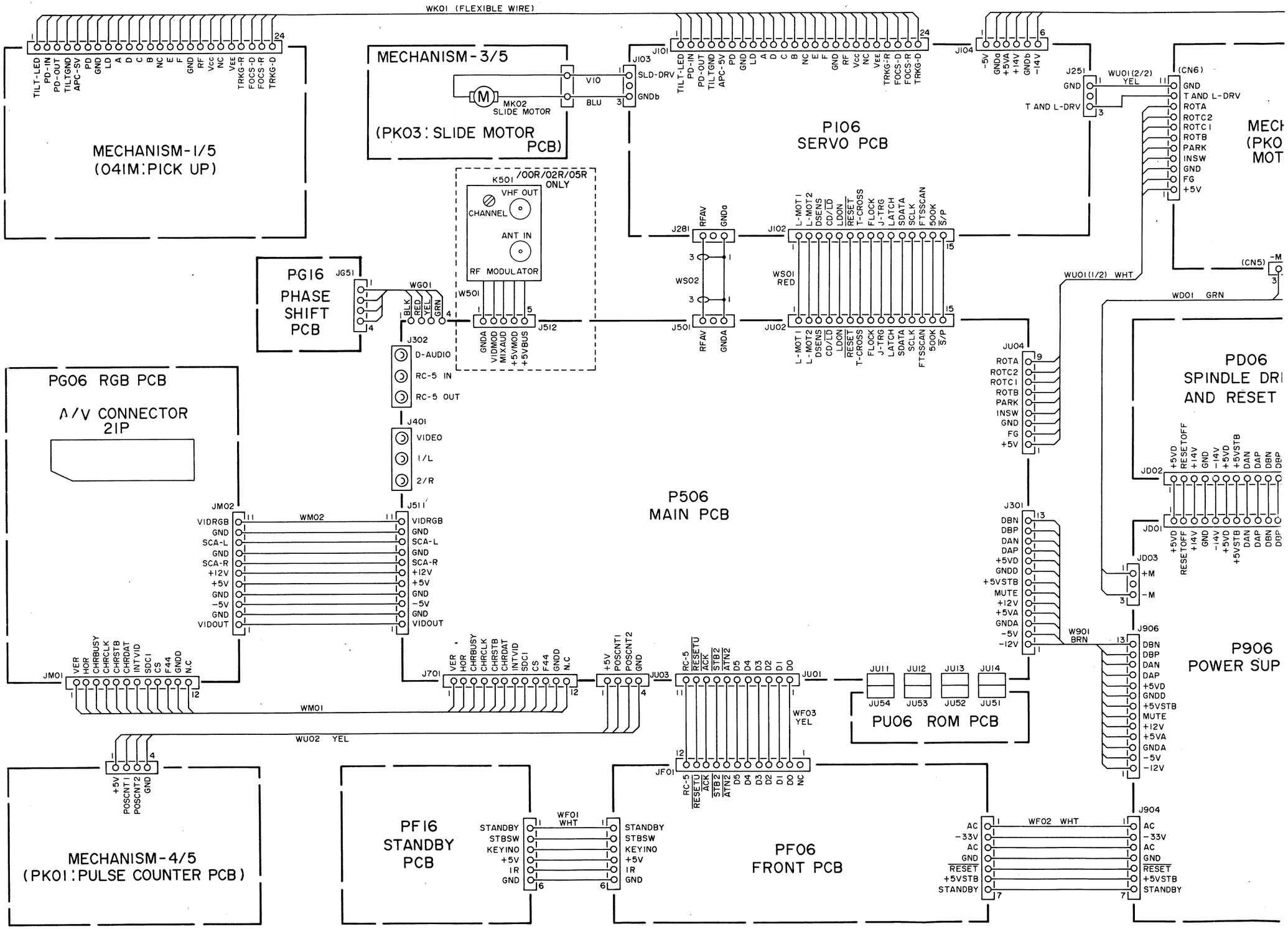
S-VIDEO	Super Video
S1 – S6	Analog Switch
SBK	Set Burst Key
SC	Sub-carrier
SCA	A/V Connector, Audio Output
SCAB	Sub-coding Clock
SCI	Serial Clock Input
SCKN	Data-Clock Input
SCLK	Serial Data Clock
SCOR	Sub-code Synchronization
SDAB	Sub-coding Data
SDATA	Serial Data
SDATAIN	Serial Data Input
SDATAOUT	Serial Data Output
SDC	Sandcastle
SDR	Slider Drive Signal
SEG a – j	Segment a – j
SEP.	Synchronizing Signal Separator
SGSW	Signal Generator Switch
SI	Selects Superimposition
SLD-DRV	Slide Motor Drive
SLP	Slope Setting
SLPI	Slider OP-Amp. Input
SLPO	Slider OP-Amp. Output
SP	Set Plateau Key
SSM	Start/Stop Motor Input
ST	Scan Trigger Pulse
STB	Strobe
STBSW	Standby Switch
STBY	System Stand-by
STS	Status Register
SUB Q	Sub-code Q-Data
SW1 – 4	System Select Switch
SWAB	Sub-coding Word Clock Output
SWT	Internal Clock Divided by 256
T-CROSS	Tracking Cross
T&L-DRV	Tilt & Loading Motor Drive
TADC	Tacho Input for DC Motor
TBC	Time Base Corrector
TBCERR	Time Base Correction Error
TC	Time Constant
TCD	Tracking Error Amp. CD Input
TCNT	Track Count
TD1,2	2-bits to Set The Slope of The Current Limiter
TDR	Tracking Brake Drive Output
TE	Tracking Error
TGS	Tracking Gain Switching
TIDR	Tilt Drive Signal
TIPI	Tilt OP-Amp. Input
TIPO	Tilt OP-Amp. Output
TLD	Tracking Error Amp. LD Input
TM	Timer
TO1,2	Current Limiter (Accelerate or Brake)
TOC	Table of Contents
TOGL	Trick Play Toggle
TOK	Tacho-OK Signal
TP ADJ	Adjust The Burst Flag Position
TPO	Tracking OP-Amp. Output
TRKG	Tracking
TRKG-D	Tracking Drive
TRKG-R	Tracking Return
TSET	Tilt Comparator Setting
TSTB	Test Control Input
UPDN	Lens Up-Down Output
V.C.O	Voltage Controlled Oscillator
V-SYNC	Vertical Synchronizing Signal
VBL	Back Level
VCAL	Voltage Controlled Amplifier, L-ch
VCAR	Voltage Controlled Amplifier, R-ch
VCL	Character Level
VCXO	Voltage Controlled X'tal Oscillator
VDC/2	Reference Voltage Capacitor Pad
VDD/2	Reference Voltage Capacitor Pad
VDDA	Supply Voltage (Analog)
VER	Vertical Sync.
VHLF	Half-Luminance Input Color Encoder
VID IN	Video Input
VIDMOD	Video Modulator
VIDOUT	Video Signal to Output Connector
VIDRGB	Video Signal to RGB Circuit
VIDSCA	Video Signal to A/V Connector
VIDY/C	Video Y/C Signal
VMON	Character Monitor Terminal
VOB	Voltage Auto Bias
VP	Supply Voltage
VREF	Reference Voltage Output
VSSA	Analog Ground
VVL	Video Level
VXO	Voltage Controlled X'tal Oscillator
WM	Window for Measuring
WR	Write
WS	Word Select
WSAB	Word Select
WSBD	Word Select
WTO	Watch-dog Timer Output
XSYS	System Clock Output
XTAL	Crystal Oscillator
Y IN (OUT)	Y Signal Input (Output)
YH	Y Signal Halftone
YMIX	Y Signal Mix
YS	Y Signal Superimpose
ZRPM	Zero Rotation Detection
φ	Phase

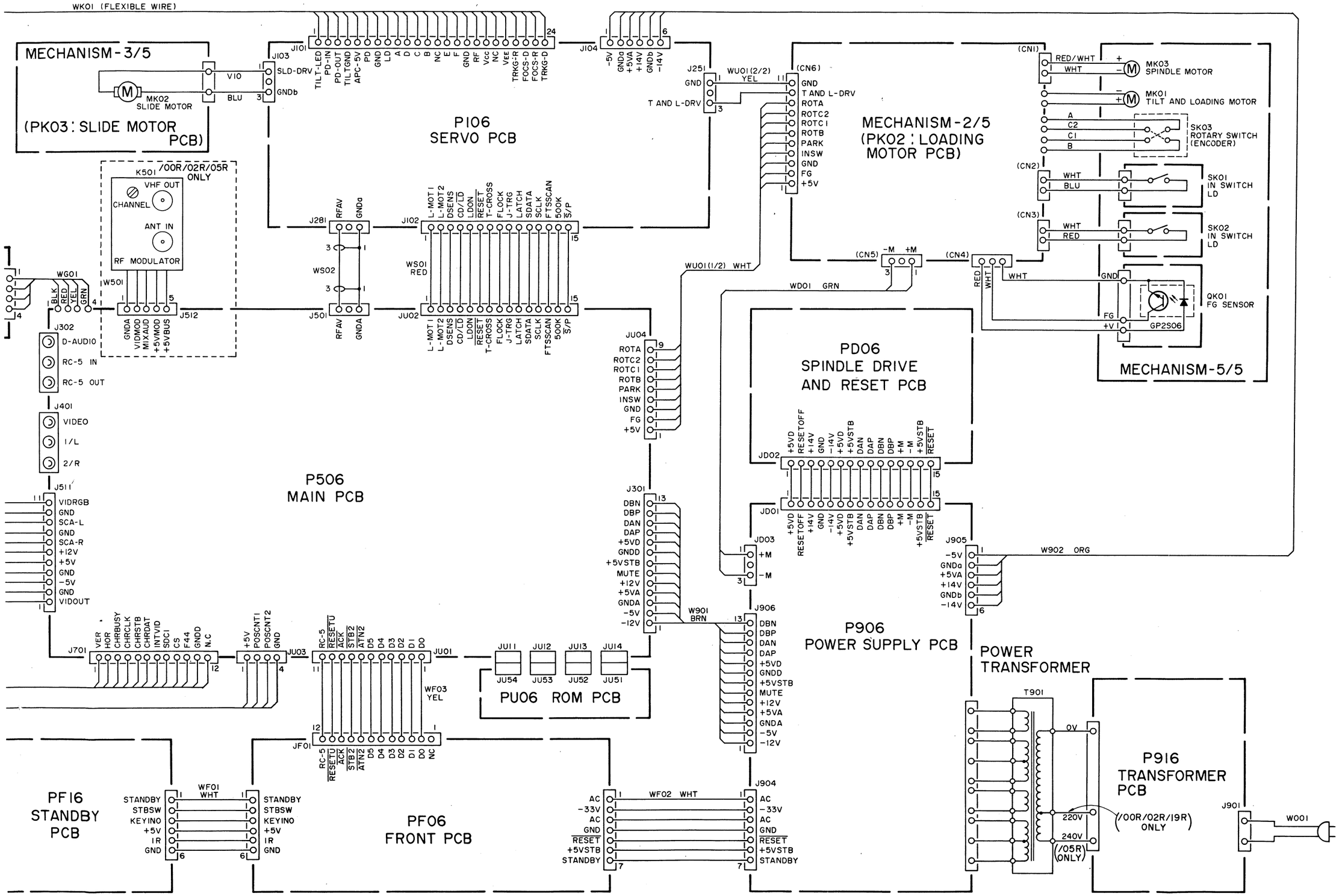
VIII. BLOCK DIAGRAMS

A. CIRCUIT BLOCK DIAGRAM



IX. WIRING DIAGRAM




WK01 (FLEXIBLE WIRE)
MECHANISM-3/5
V10
BLU
SLD-DRV
GNDb
MK02
SLIDE MOTOR
(PK03: SLIDE MOTOR PCB)
J103
J101
TILT-LED
PD-IN
PD-OUT
TILTGND
APC-5V
PD
GND
LD
A
D
C
B
NC
E
F
GND
RF
Vcc
NC
VEE
TRKG+R
FOCS-D
FOCS-R
TRKG-D
J104
-5V
GNDa
+5VA
+14V
GNDb
-14V
P106
SERVO PCB
J251
GND
T AND L-DRV
WU01(2/2)
YEL
(CN6)
GND
T AND L-DRV
ROTA
ROTC2
ROTC1
ROTB
PARK
INSW
GND
FG
+5V
MECHANISM-2/5
(PK02: LOADING MOTOR PCB)
(CN1)
RED/WHT
WHT
MK03
SPINDLE MOTOR
MK01
TILT AND LOADING MOTOR
A
C2
C1
B
SK03
ROTARY SWITCH
(ENCODER)
(CN2)
WHT
BLU
SK01
IN SWITCH
LD
(CN3)
WHT
RED
SK02
IN SWITCH
LD
(CN5)
-M
+M
(CN4)
WU01(1/2) WHT
WD01 GRN
RED
WHT
WHT
GND
FG
+V
GP2S06
QK01
FG SENSOR
MECHANISM-5/5
K501 /00R/02R/05R ONLY
VHF OUT
CHANNEL
ANT IN
RF MODULATOR
W501
WG01
BLK
RED
YEL
GRN
J512
GNDA
VIDMOD
MIXAUD
+5VMOD
+5VBUS
J302
D-AUDIO
RC-5 IN
RC-5 OUT
J401
VIDEO
1/L
2/R
J511
VIDRGB
GND
SCA-L
GND
SCA-R
+12V
+5V
GND
-5V
GND
VIDOUT
J281
RFAV
GNDa
WS02
J501
RFAV
GNDA
J102
L-MOT1
L-MOT2
DSENS
CD/LD
LDON
RESET
T-CROSS
FLOCK
J-TRG
LATCH
SDATA
SCLK
FTSSCAN
500K
S/P
WS01
RED
JU02
L-MOT1
L-MOT2
DSENS
CD/LD
LDON
RESET
T-CROSS
FLOCK
J-TRG
LATCH
SDATA
SCLK
FTSSCAN
500K
S/P
JU04
ROTA
ROTC2
ROTC1
ROTB
PARK
INSW
GND
FG
+5V
PD06
SPINDLE DRIVE AND RESET PCB
JD02
+5VD
RESETOFF
+14V
GND
-14V
+5VD
+5VSTB
DAN
DAP
DBN
DBP
+M
-M
+5VSTB
RESET
JD01
+5VD
RESETOFF
+14V
GND
-14V
+5VD
+5VSTB
DAN
DAP
DBN
DBP
+M
-M
+5VSTB
RESET
J905
-5V
GNDa
+5VA
+14V
GNDb
-14V
W902 ORG
P506
MAIN PCB
J301
DBN
DBP
DAN
DAP
+5VD
GNDD
+5VSTB
MUTE
+12V
+5VA
GNDA
-5V
-12V
JD03
+M
-M
W901
BRN
J906
DBN
DBP
DAN
DAP
+5VD
GNDD
+5VSTB
MUTE
+12V
+5VA
GNDA
-5V
-12V
P906
POWER SUPPLY PCB
POWER TRANSFORMER
T901
0V
220V
240V
(/00R/02R/19R) ONLY
(/05R) ONLY
P916
TRANSFORMER PCB
J901
W001
J701
VER
HOR
CHRBUSY
CHRCLK
CHRSTB
CHRDAT
INTVID
SDCI
CS
F44
GNDD
N.C
JU03
+5V
POSCNT1
POSCNT2
GND
JU01
RC-5
RESETU
ACK
STB2
ATN2
D5
D4
D3
D2
D1
D0
WF03
YEL
JU11
JU12
JU13
JU14
JU54
JU53
JU52
JU51
PU06 ROM PCB
JF01
RC-5
RESETU
ACK
STB2
ATN2
D5
D4
D3
D2
D1
D0
NC
PF16
STANDBY PCB
WF01
WHT
STANDBY
STBSW
KEYINO
+5V
IR
GND
PF06
FRONT PCB
WF02 WHT
AC
-33V
AC
GND
RESET
+5VSTB
STANDBY
J904
AC
-33V
AC
GND
RESET
+5VSTB
STANDBY

CS 33 711

X. SCHEMATIC DIAGRAMS AND P.C. BOARDS

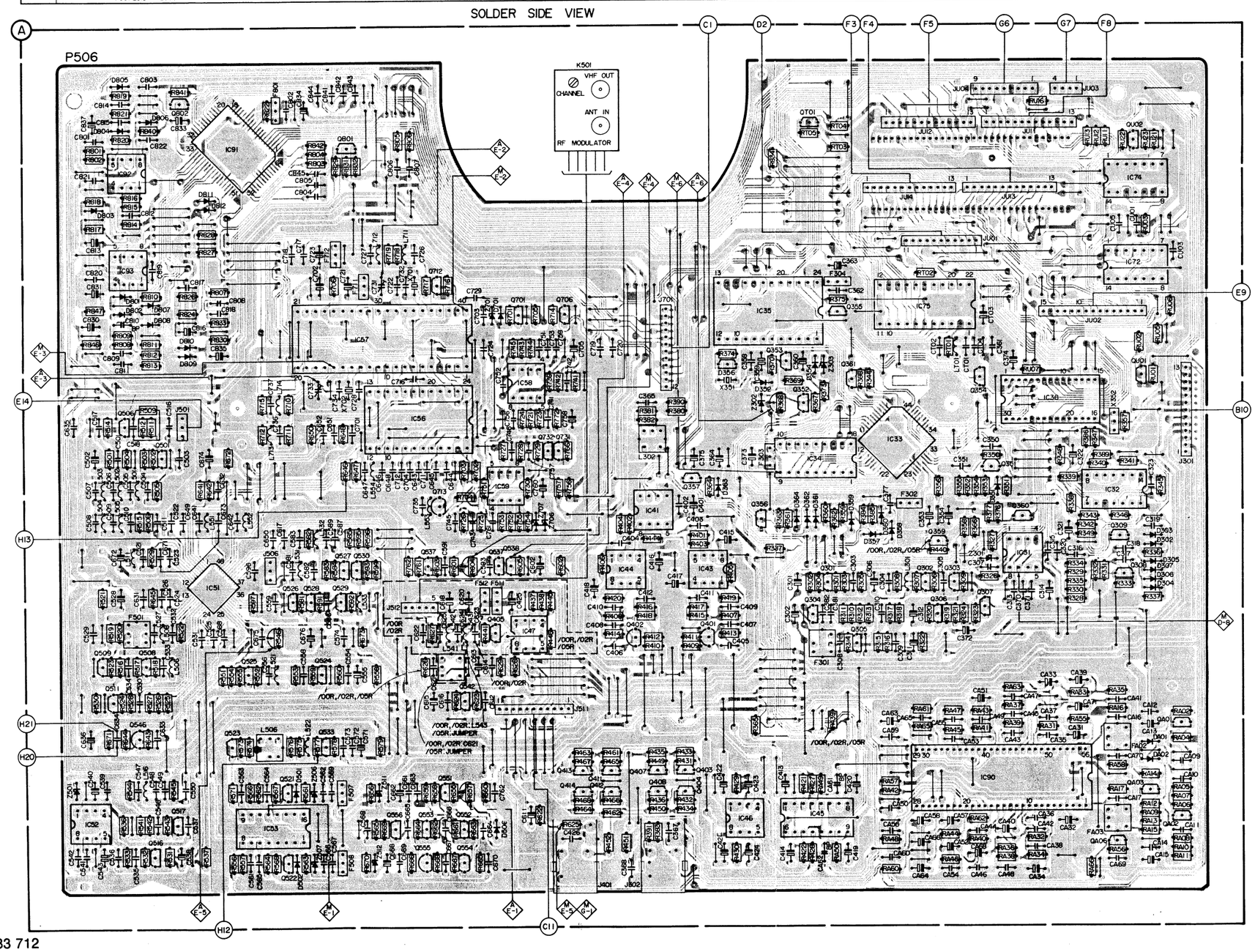
A. P506 MAIN/PG16 PHASE SHIFT PCBs

R	R801 R802 R814～R821 R840　R841　R807 R833　R822　R842 R804 R803 R829 R831 R832 R805 R806　R702～R704　R701 R743～R745 R705 R714 R739 R742 R741 R380～R382 R390 R401 R403 R364 R374　R834　RT05 RT04 RT03 R375　RT02　RT01　RU16 RU11～RU13 RU21～RU23 RU02 RU03 RU01 RU05 RU06	R
	R846 R847 R808～R813　R824 R826～R828 R830 R715 R710～R712 R650 R706 R646～R648 R719 R718 R717 R716 R726 R725 R751～R757 R727～R730 R766　R406 R404 R402 R444　R417 R415 R419 R405　R368～R370　R367 R373　R388 R344　R440 R350～R356 R377 R376　RU07 R348 R338～R341 R386 R347 R389 R357 R345	
	R514 R501～R506 R565 R512 R511 R509 R641 R642 R672　R597　R561～R585 R591～R596 R558～R560 R673 R762 R761 R601　R605　R441　R724 R721 R723 R772　R420 R408 R414 R416 R418 R412 R410 R411 R409 R407 R413 R367 R359～R363 R301～R305 R310　R318 R306～R309 R319～R324 R358 R366 R326 R327 R328～R335 R342 R349 R343 R346 R336 R337	
	R530　R516～R528 R671 R644 R643 R529 R645 R551～R555 R571 R566 R562 R567 R561 R573～R579　R626 R627 R624 R623 R629 R628 R437 R438 R445 R625 R461～R468　R449 R450 R431～R436　R429 R365　R421 R427 R449 R439 R384 R385 R457 R442 R461 R465 R447 R445 R443 R441 R463 R437 R439 R431 R433 R455 R435 R441 R402	
	R536 R541～R545 R531　R533 R537　R556 R557 R564 R568　R563　R655～R660 R561 R661～R664 R665～R670　R622 R446　R452 R451　R391 R383　R430　R422 R428 RA50　RA48 RA60　RA44 RA46 RA62 RA40 RA36 RA38 RA32 RA34 RA66 RA58 RA17 RA56 RA04～RA15	
C	C821 C801 C837 C814 C815 C803 C822 C833 C835 C808　C737 C736 C802 C834 C845 C841～C844 C804～C807 C712 C716 C704 C726 C729 C703 C724 C752 C751 C753 C759 C742 C705 C719 C720 C365　C375 C364 C358～C360 C373　C363 C362　CT02　CT01 CT04 CT03 C361 C374　CU05 CU01　CU03	C
	C813 C820 C831 C830 C809～C812 C816～C819 C674 C632 C673 C642 C718 C717 C723 C702 C721 C727 C731 C722 C732 C643～C648 C745 C743 C761 C756 C746 C760 C757 C741 C758　C404 C416　C417 C401～C403　C302 C301 C382 C381 C308 C303 C306 C304 C377 C353 C354 C351 C350　C320～C322 C316～C319　C323	
	C635 C501～C511 C516～C518 C631 C521～C524 C671 C649 C641 C531 C525 C588 C676 C733 C652 C651 C734 C728 C701 C735 C711 C620～C625 C618 C612～C616 C591 C593 C418 C410 C408 C406 C412　C411 C415　C310 C309 C311 C312 C305 C372 C307 C370 C371　C313～C315　CA41 CA16 CA12～CA15	
	C636 C529 C634 C528 C672 C534 C530 C633 C527 C526 C533 C596 C675 C556 C559 C558 C581～C583 C650 C617 C586 C589 C587 C574 C554 C555 C425 C602　C405 C409 C407 C413　CA61 C420　CA63 CA59 CA64～CA66 CA57 CA43～CA49 CA33～CA38　CA39 CA71 CA17 CA70	
	C539～C543 C536 C535 C546～C550 C538 C537 C532 C561 C563～C565 C562 C566～C569 C571～C573 C661～C663 C665～C669 C664 C670 C762 C611　C426　C368　C367　C421～C424　C414　C412　C419　CA56 CA50 CA60 CA58 CA52～CA55 CA51 CA68 CA40 CA42　CA32 CA31　CA69　CA09～CA11	
Q－IC	IC92 IC93　Q802　IC91　Q801 IC57　IC56 Q712 Q713　IC59 Q701 IC58 Q732 Q706 Q731　IC44 Q402 IC41　Q357 IC43　IC35 Q353　QT01　Q355 Q361　IC33　IC75　Q354　QU02 IC74 IC72	Q－IC
	Q506 Q508 Q501　IC51　IC53　Q526 Q528 Q524 Q529 Q527 Q530　Q537　Q542　Q405 Q537 Q538　Q413　Q411　Q407　Q401 Q403　Q356　Q352 IC34 Q301 Q305　Q302 Q359　Q307　Q351 Q360　IC36　IC32 Q309 Q308 QU01	
	IC52 Q509 Q511 Q546 Q516 Q517　Q523 Q525　Q521 Q522　Q533　Q556 Q555 Q553 Q551 Q552 Q554　IC47　Q414　Q412　Q408　Q404　IC46　IC45 Q304　Q306 Q303　IC90　IC31　QA06　QA03 QA01 QA02	
D－Z	D803 D804～D806　D811 D812　D501 Z506　Z511　Z701 D701　Z707 D706　D363 D356 D352　D354 Z303　D360　D351　D302～D307	D－Z
	Z501　D801 D802　D807～D810　D502 Z507　Z512　D506　Z302　D364 D362 D361 D359　D357　D358　Z301　DA01 DA02	
F－L－X	L501～L505 L511　L508　L551　L552 L713 L714 F801 L531 L532 F712 F711 X702 L554 L712 L711　F512 F511　L302　X351　F303　F304　F302　LT01　X352	F－L－X
	F501 L516　L506　L521　L522　F507 F508 L533　X701 L553 L542 L543　F301　L301　FA03　FA02	

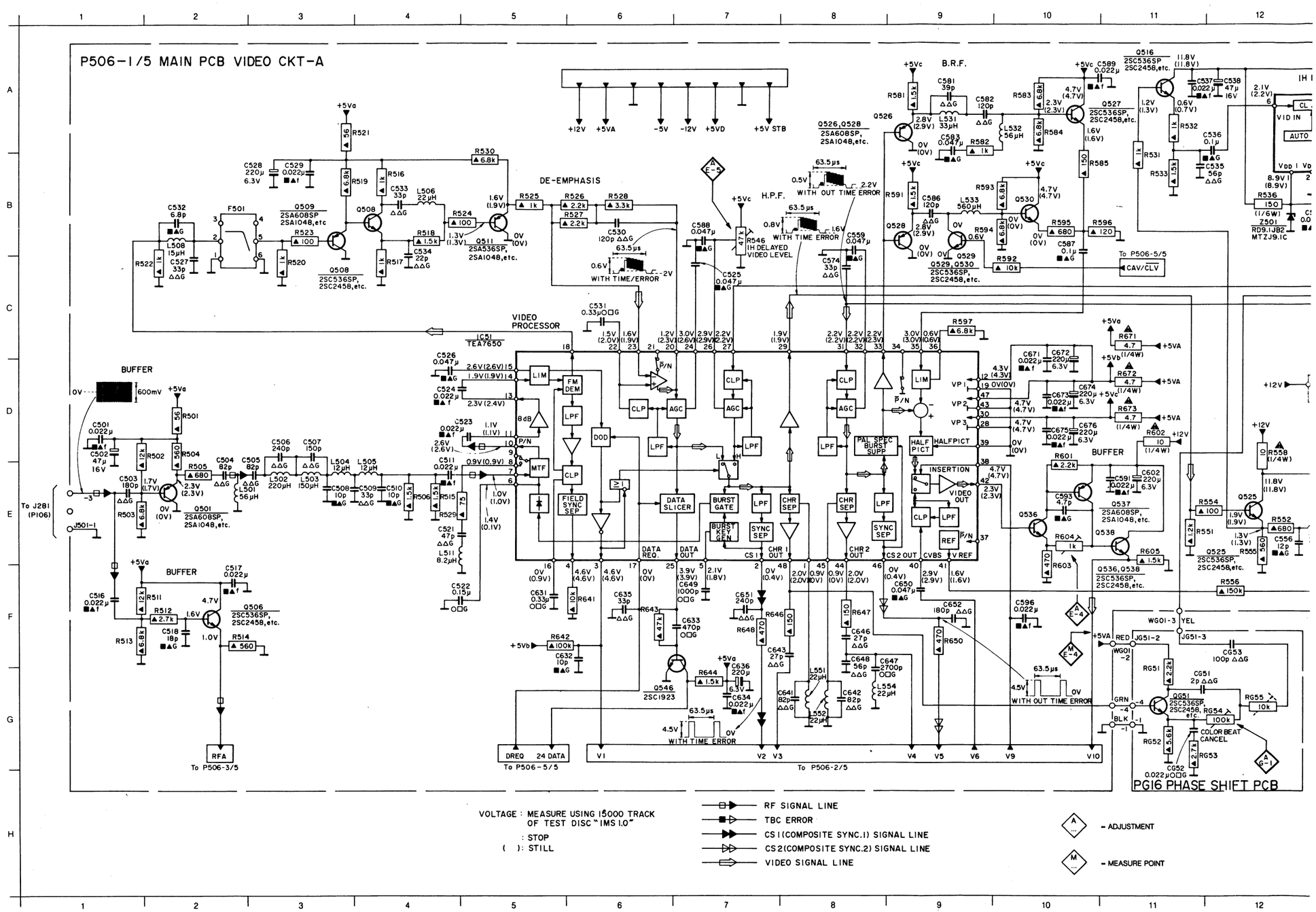
R	RG53 RG52 RG54　RG55　RG51	R
C	CG52　CG51　CG53	C
Q	QG51	Q

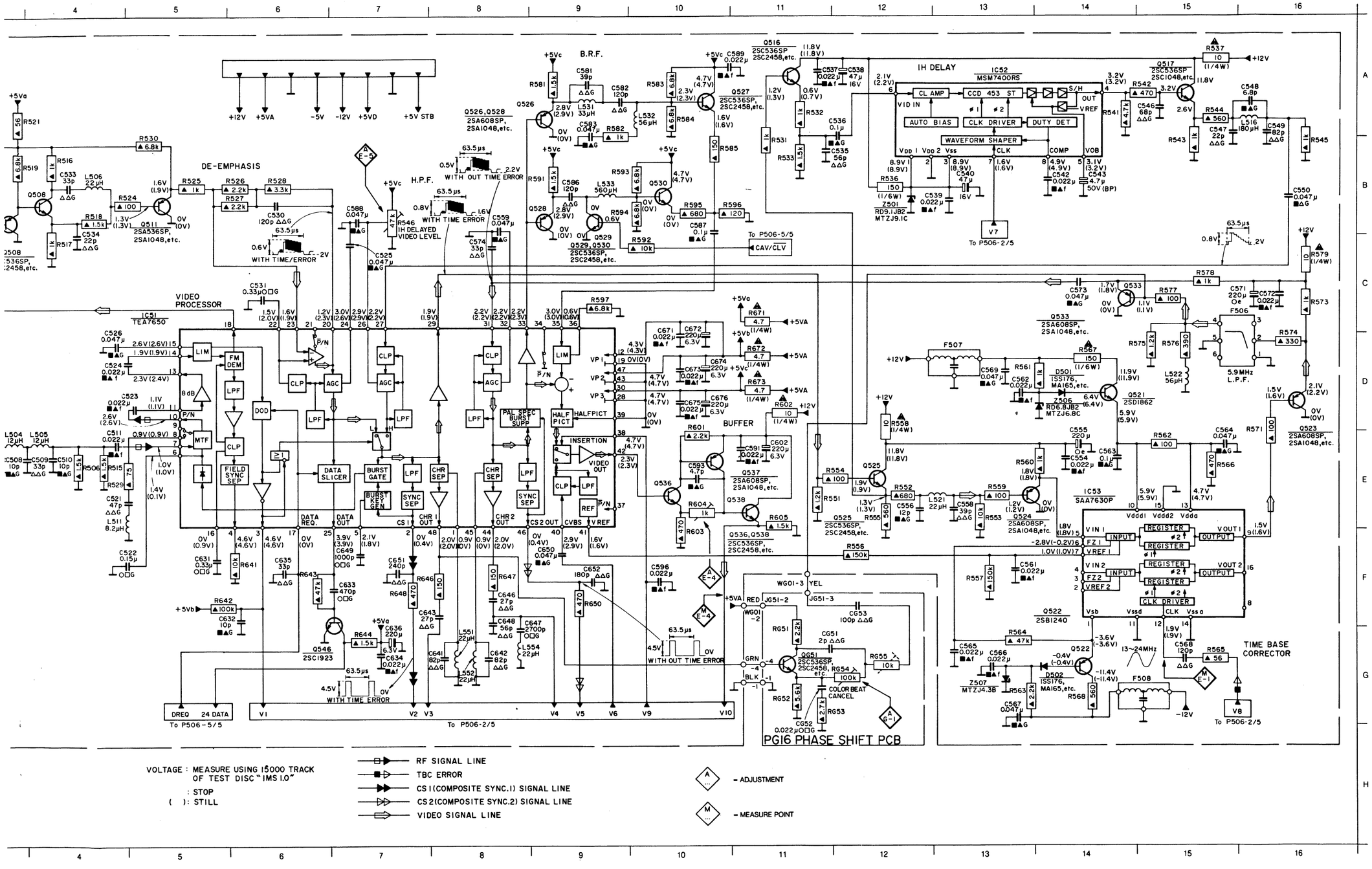
SOLDER SIDE VIEW

SOLDER SIDE VIEW



B. P506 MAIN VIDEO-A/PG16 PHASE SHIFT SCHEMATIC DIAGRAMS





C501	D1	Q508	F3
C502	E1	Q509	B3
C503	E1	Q511	B5
C504	E2	Q516	A11
C505	E3	Q517	A15
C506	D3	Q521	D14
C507	D3	Q522	G14
C508	B2	Q523	E16
C508	E3	Q524	E13
C510	E4	Q525	E12
C511	E4	Q526	A8
C516	F1	Q527	A11
C517	F2	Q528	B9
C518	F2	Q529	C9
C521	E4	Q530	B10
C522	F4	Q533	C14
C523	D5	Q536	E10
C524	D4	Q537	E11
C525	C7	Q538	E11
C526	D4	Q646	G6
C527	C2	Q651	G11
C528	B3	R501	D2
C529	B3	R502	E2
C530	B6	R503	E1
C531	C6	R504	E2
C532	B2	R505	E2
C533	B4	R506	E4
C534	C4	R511	F2
C535	B12	R512	F2
C536	A12	R513	F1
C537	A11	R514	F2
C538	A12	R515	E4
C539	B12	R516	B4
C540	B13	R517	C4
C542	B14	R518	B4
C543	B14	R519	B4
C546	A15	R520	C3
C547	A15	R521	A4
C548	A16	R522	C2
C549	A16	R523	B3
C550	B16	R524	B5
C554	E14	R525	B5
C555	E14	R526	B6
C556	E12	R527	B6
C558	E13	R528	B6
C559	B8	R529	E4
C561	F13	R530	B5
C562	D13	R531	B11
C563	E14	R532	A11
C564	E15	R533	B11
C565	G13	R536	B12
C566	G13	R537	A15
C567	G13	R541	A14
C568	G15	R542	A14
C569	D13	R543	B15
C571	C15	R544	A15
C572	C16	R545	B16
C573	C14	R546	B7
C574	C8	R551	E11
C581	A9	R552	E12
C582	A9	R553	E13
C583	A9	R554	E12
C586	B9	R555	E12
C588	B7	R556	F12
C589	A11	R557	F13
C591	E11	R558	D12
C593	E10	R559	E13
C596	F10	R560	E13
C602	E11	R561	D13
C631	F5	R562	E15
C632	G6	R563	G13
C633	F7	R564	G13
C634	G7	R565	G15
C635	F6	R566	E15
C636	G7	R567	D14
C641	G8	R568	G14
C642	G8	R571	E16
C643	F7	R573	C16
C646	F8	R574	D16
C647	G9	R575	D14
C648	G8	R576	D15
C649	F7	R577	C15
C650	F9	R578	C15
C651	F7	R579	C16
C652	F9	R581	A9
C671	D10	R582	A9
C672	D10	R584	A10
C673	D10	R591	B9
C674	D10	R592	C10
C675	D10	R593	B9
C676	D10	R594	B9
CG51	G11	R595	B10
CG53	F12	R596	B11
D501	D14	R597	C9
D502	G14	R601	E10
F501	B2	R602	D11
F507	D13	R603	F10
F508	G14	R604	E10
I C51	C5	R605	E11
I C52	A13	R641	F6
I C53	E14	R642	F5
L501	E3	R643	F6
L502	E3	R644	G7
L503	E3	R646	F7
L504	E3	R647	F8
L506	B4	R648	F7
L516	A16	R650	F9
L521	E12	R671	C11
L522	D15	R672	D11
L531	A9	R673	D11
L532	A10	RG51	G11
L533	B9	RG52	G11
L551	G8	RG53	G12
L552	G8	RG54	G12
L554	G8	RG55	G12
Q501	E2	Z501	B12
Q508	B4	Z506	D14

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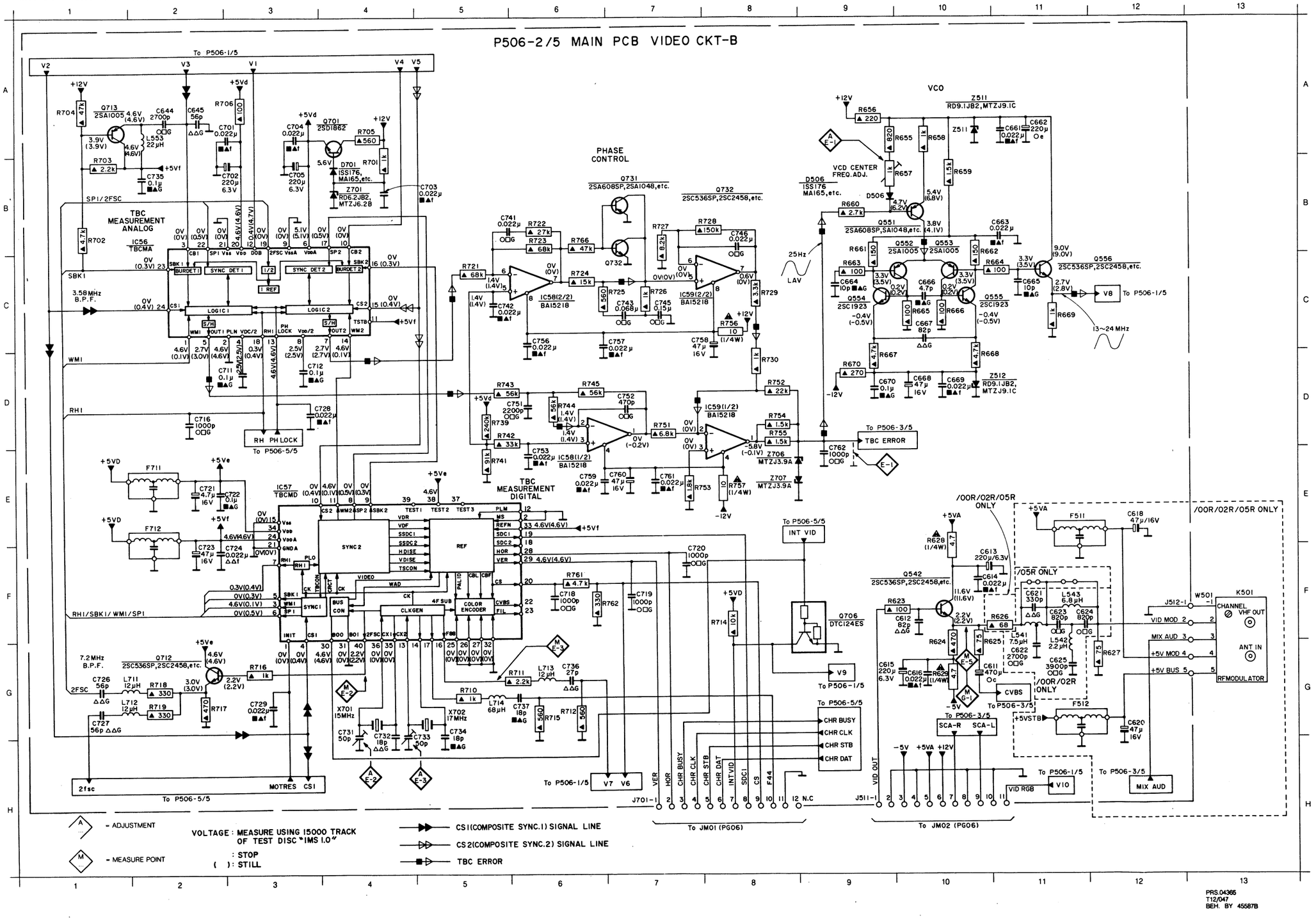
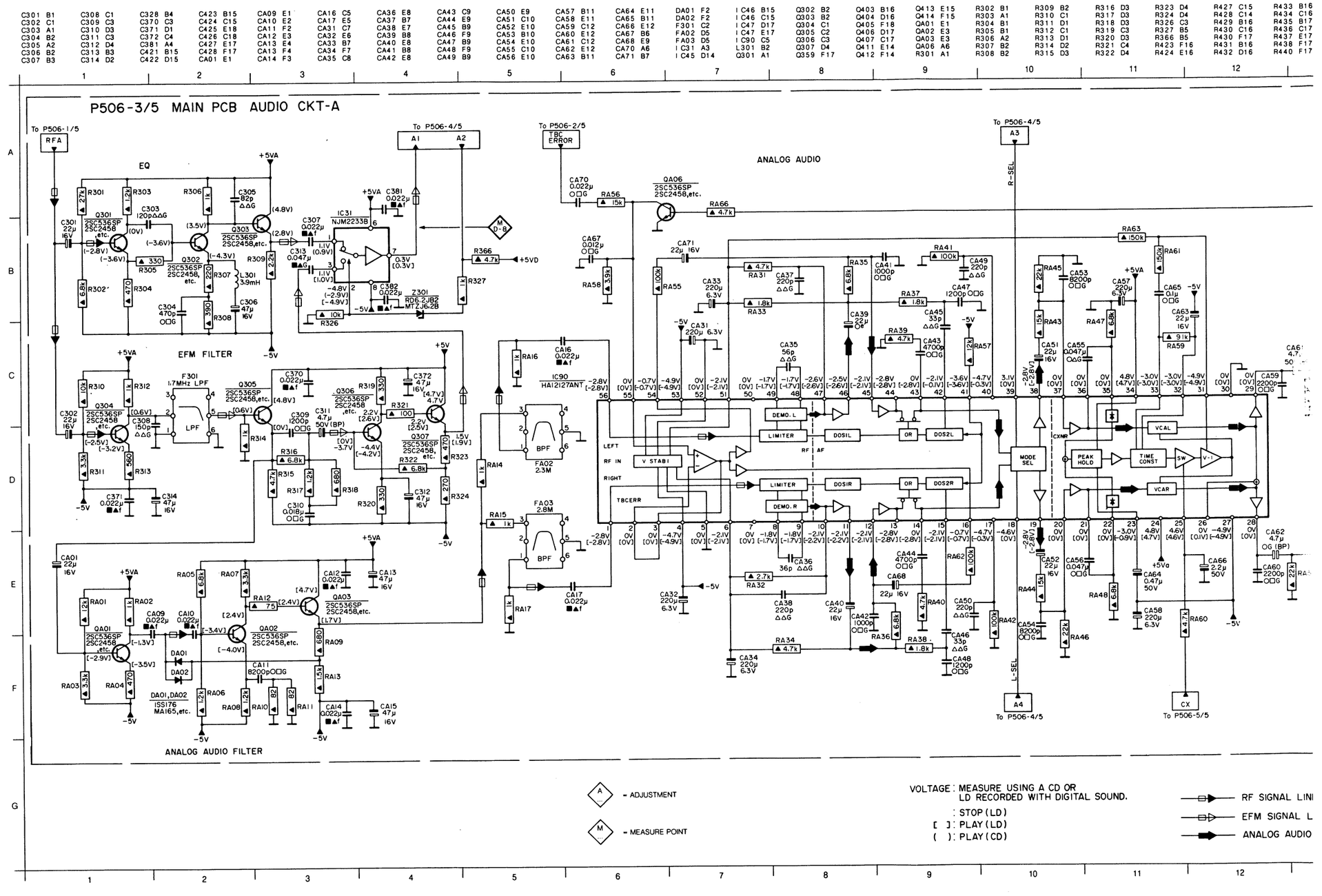
C. P506 MAIN VIDEO-B SCHEMATIC DIAGRAM

C611 G10 C612 F9 C613 F10 C614 F10 C615 G9 C616 G10 C618 E12 C620 G12
C621 F11 C623 F11 C624 F11 C625 G11 C644 A2 C645 A2 C661 A11 C662 A11
C663 B10 C664 C9 C665 C11 C666 C10 C667 C10 C668 D10 C669 D10 C670 D9
C701 A2 C702 B3 C703 B5 C704 A3 C705 B3 C711 D2 C712 D3 C716 D2
C718 F6 C719 F7 C720 F7 C721 E2 C722 E3 C723 F2 C724 F3 C726 G1
C727 G1 C728 D3 C729 G3 C731 G4 C732 G4 C733 H4 C734 G5 C735 B2
C736 G6 C737 G5 C741 B5 C742 C5 C743 C7 C745 C7 C746 B8
C752 D7 C753 E6 C756 C6 C757 C7 C758 C7 C759 E6 C760 E7 C761 E7
C762 E9 D506 B9 D701 B4 F511 E11 F512 G11 I C56 B1
I C57 E3 I C58 C6 I C58 E6 I C59 C7 I C59 D7 L542 G11 L543 F11 L553 A2
L711 G1 L712 G1 L713 G6 L714 G5 Q542 F10 Q551 B9 Q552 B9 Q553 B10
Q554 C9 Q555 C10 Q556 C11 Q701 A4 Q706 F9 Q712 G2 Q713 A1 Q731 B7
Q732 B8 R623 F9 R624 G10 R625 G10 R626 F10 R627 G12 R628 F10 R629 G10
R655 A10 R656 A9 R657 B9 R658 A10 R659 B10 R660 B9 R661 C9 R662 B10
R663 C9 R664 C10 R665 C10 R666 C10 R667 D9 R668 D10 R670 D9 R701 B4
R702 B1 R703 A1 R704 A1 R705 A2 R706 G5 R710 G5 R711 G5 R712 G6
R714 F8 R715 G6 R716 G3 R717 G2 R718 G2 R719 G2 R721 C5 R722 B6
R723 C6 R724 C7 R725 C7 R726 B7 R727 B7 R728 B7 R729 C8 R730 D8
R739 D5 R741 E5 R742 D5 R743 D5 R744 D6 R745 D6 R751 D7 R752 D8
R753 E7 R754 D8 R755 D8 R756 C8 R757 E8 R761 F6 R762 F6 R766 B6
Z511 A10 Z512 D10 Z701 B4 Z706 E8 Z707 E8



D. P506 MAIN AUDIO-A SCHEMATIC DIAGRAM



CA16 C5 CA17 E5 CA31 C7 CA32 E6 CA33 B7 CA34 F7 CA35 C8
CA36 E8 CA37 B7 CA38 E7 CA39 B8 CA40 E8 CA41 B8 CA42 E8
CA43 C9 CA44 E9 CA45 B9 CA46 F9 CA47 B9 CA48 F9 CA49 B9
CA50 E9 CA51 C10 CA52 E10 CA53 B10 CA54 E10 CA55 C10 CA56 E10
CA57 B11 CA58 E11 CA59 C12 CA60 E12 CA61 C12 CA62 E12 CA63 B11
CA64 E11 CA65 B11 CA66 E12 CA67 B6 CA68 E9 CA70 A6 CA71 B7
DA01 F2 DA02 F2 F301 C2 FA02 D5 FA03 D5 I C31 A3 I C45 D14
I C46 B15 I C46 C15 I C47 D17 I C47 E17 I C90 C5 L301 B2 Q301 A1
Q302 B2 Q303 B2 Q304 C1 Q305 C2 Q306 C3 Q307 D4 Q359 F17
Q403 B16 Q404 D16 Q405 F18 Q406 D17 Q407 C17 Q411 E14 Q412 F14
Q413 E15 Q414 F15 QA01 E1 QA02 E3 QA03 E3 QA06 A6 R301 A1
R302 B1 R303 A1 R304 B1 R305 B1 R306 A2 R307 B2 R308 B2
R309 B2 R310 C1 R311 D1 R312 C1 R313 D1 R314 D2 R315 D3
R316 D3 R317 D3 R318 D3 R319 C3 R320 D3 R321 C4 R322 D4
R323 D4 R324 D4 R326 C3 R327 B5 R366 B5 R423 F16 R424 E16
R427 C15 R428 C14 R429 B16 R430 C16 R430 F17 R431 B16 R432 D16
R433 B16 R434 C16 R435 B17 R436 C17 R437 E17 R438 F17 R440 F17
R441 E11 R441 F18 R449 C17 R450 C17 R451 B18 R452 C17 R461 E14
R462 F14 R463 E15 R464 F15 R465 E14 R466 F14 R467 E15 R468 F15
RA01 E1 RA02 E1 RA03 F1 RA04 F1 RA05 E2 RA06 F2 RA07 E2
RA08 F2 RA09 F3 RA10 F2 RA11 F3 RA12 E2 RA13 F3 RA14 D5
RA15 D5 RA16 C5 RA17 E5 RA31 B7 RA32 E7 RA33 B7 RA34 F7
RA35 B8 RA36 F8 RA37 B9 RA38 F9 RA39 C9 RA40 E9 RA41 B9
RA42 E10 RA43 C10 RA44 E10 RA45 B10 RA46 E10 RA47 C10 RA48 E11
RA49 C13 RA50 E13 RA55 B6 RA56 A6 RA57 B6 RA58 B6 RA59 C11
RA60 E11 RA61 B11 RA62 E9 RA63 B11 RA66 A7 Z301 B4

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

T-A

ANALOG AUDIO

BUFFER

BILINGUAL AND A/D

/00R/02R/05R ONLY

MIX AUDIO

(A)(B) MODE
L L STEREO
H L RIGHT
L H LEFT
H H A-AUDIO

= ADJUSTMENT

= MEASURE POINT

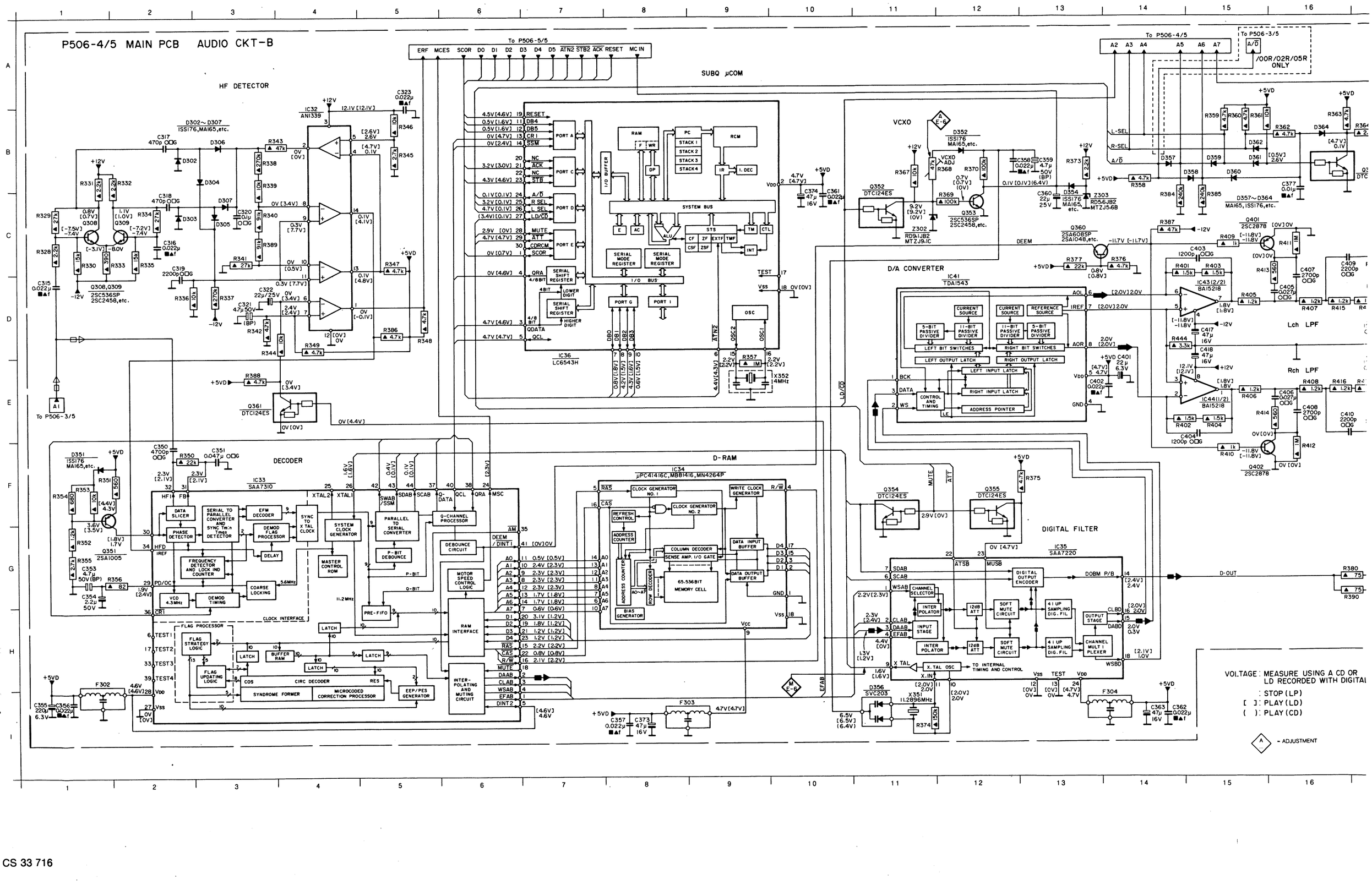
VOLTAGE: MEASURE USING A CD OR LD RECORDED WITH DIGITAL SOUND.
: STOP (LD)
[ ]: PLAY (LD)
( ): PLAY (CD)

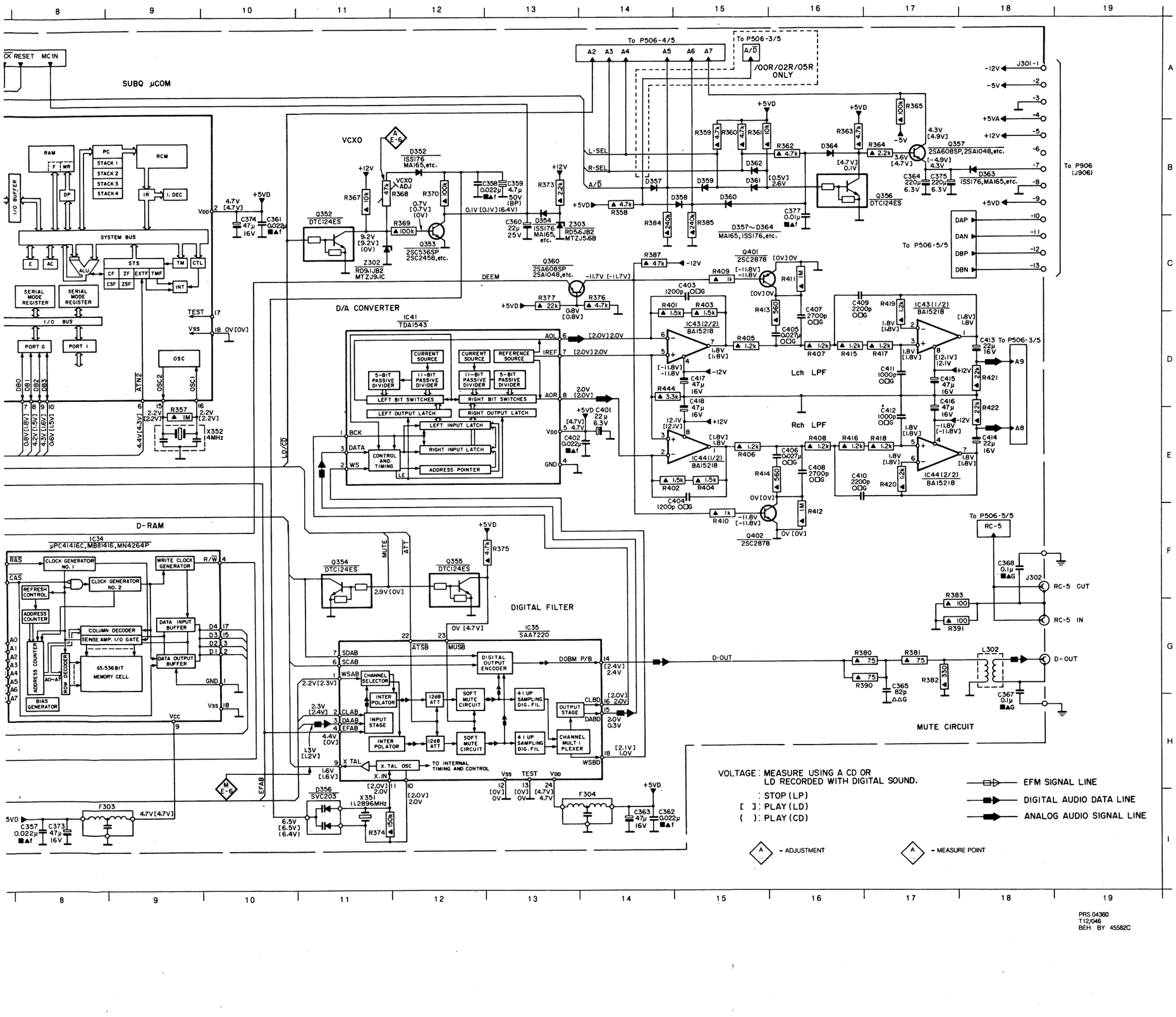
RF SIGNAL LINE
EFM SIGNAL LINE
ANALOG AUDIO SIGNAL LINE

PRS. 04364
T12/047
BEH. BY 45586C

CS 33 715

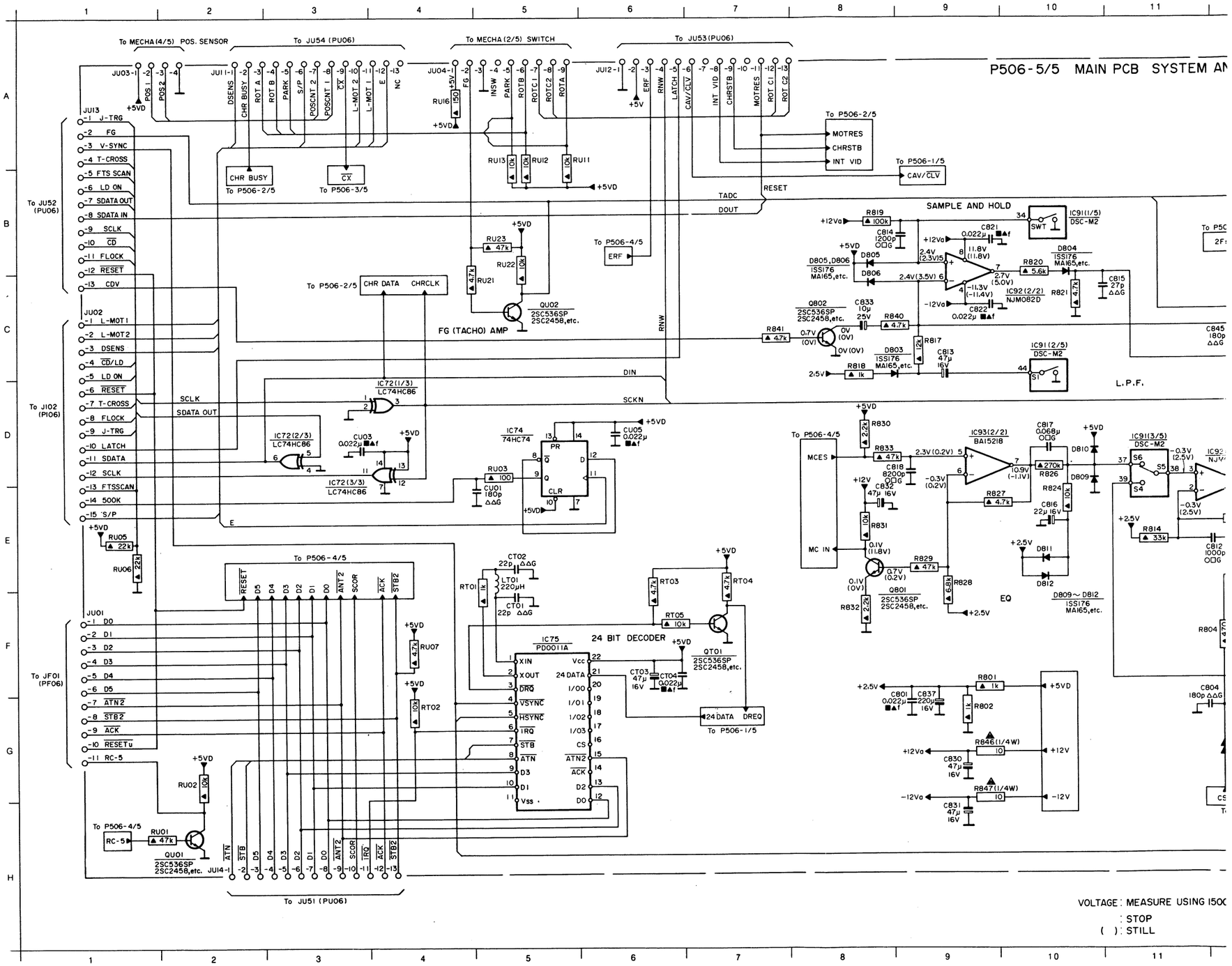
E. P506 MAIN AUDIO-B SCHEMATIC DIAGRAM



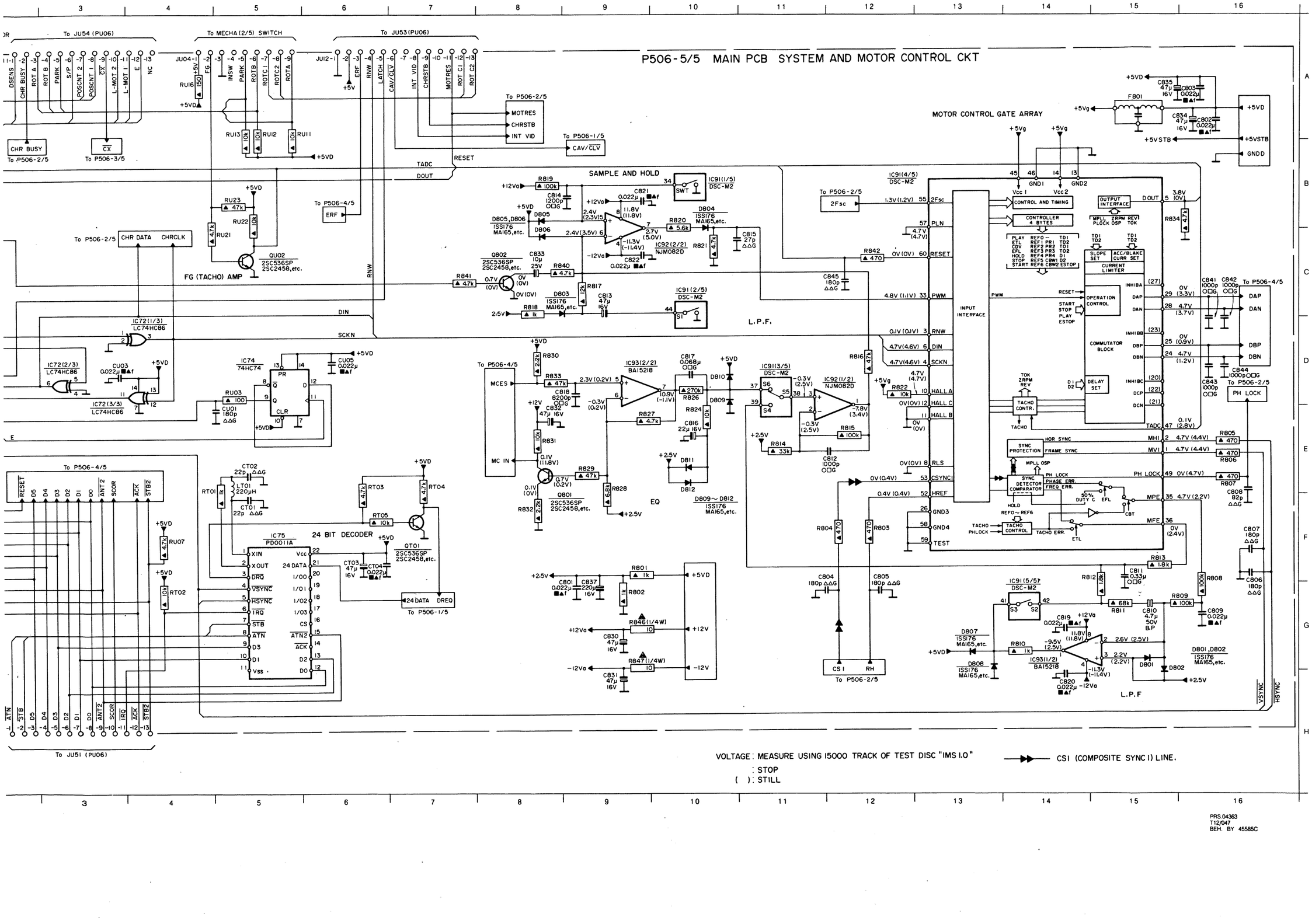


C315 D1
C316 C2
C317 B2
C318 C2
C319 C2
C320 C3
C321 D3
C322 D3
C323 A5
C350 F2
C351 F3
C353 G1
C354 G1
C355 I 1
C356 I 1
C357 I 7
C358 B12
C359 B13
C360 C13
C361 C10
C362 I 14
C363 I 14
C364 B17
C365 H17
C367 H18
C368 F18
C373 I 8
C374 C10
C375 B17
C377 B16
C401 E14
C402 E13
C403 C14
C404 F14
C405 D16
C406 E16
C407 D16
C408 E16
C409 C16
C410 E16
C411 D17
C412 E17
C413 D18
C415 D17
C416 E17
C417 D15
C418 E15
D254 C13
D302 B2
D303 C2
D304 B3
D305 C3
D306 B3
D307 C3
D351 F1
D352 B12
D356 I 11
D357 B14
D358 B14
D359 B15
D360 B15
D361 B15
D362 B15
D363 B18
D364 B16
F302 H1
F303 I 8
F304 I 13
I C32 B4
I C33 F3
I C34 F8
I C35 G13
I C36 E7
I C41 D12
I C43 D15
I C43 D17
I C44 E15
I C44 E17
L302 G18
Q308 C1
Q309 C2
Q351 G1
Q352 C11
Q353 C12
Q354 F11
Q355 F12
Q356 B17
Q357 B17
Q360 C13
Q361 E3
Q401 C15
Q402 F15
R328 C1
R329 C1
R330 C1
R331 B1
R332 B2
R333 C2
R334 C2
R335 C2
R336 D2
R337 D3
R338 B3
R339 B3
R340 C3
R341 C3
R342 D3
R343 B3
R344 D3
R345 B5
R346 B5
R347 C5
R348 D5
R349 D4
R350 F2
R351 F1
R352 G1
R353 F1
R354 F1
R355 G1
R356 G1
R357 E9
R358 B14
R360 B15
R361 B15
R362 B16
R363 B16
R364 B17
R365 A17
R367 B11
R368 B12
R369 C12
R370 B12
R373 B13
R374 I 11
R375 F13
R376 C14
R377 C13
R380 G16
R381 G17
R382 G17
R383 G17
R384 C14
R385 C15
R387 D5
R388 C13
R390 E3
R391 H16
R401 G17
R402 E14
R403 D15
R404 E15
R405 D15
R406 E15
R407 D16
R409 C15
R410 F15
R411 C16
R412 F16
R413 D15
R414 E15
R415 D16
R416 E16
R417 D17
R418 E16
R419 C17
R420 E17
R421 D18
R422 E18
R444 D14
X351 I 11
X352 E10
Z302 C11
Z303 C13
R3549 B15

F. P506 MAIN SYSTEM & MOTOR CONTROL SCHEMATIC DIAGRAM



P506-5/5 MAIN PCB SYSTEM AND MOTOR CONTROL CKT

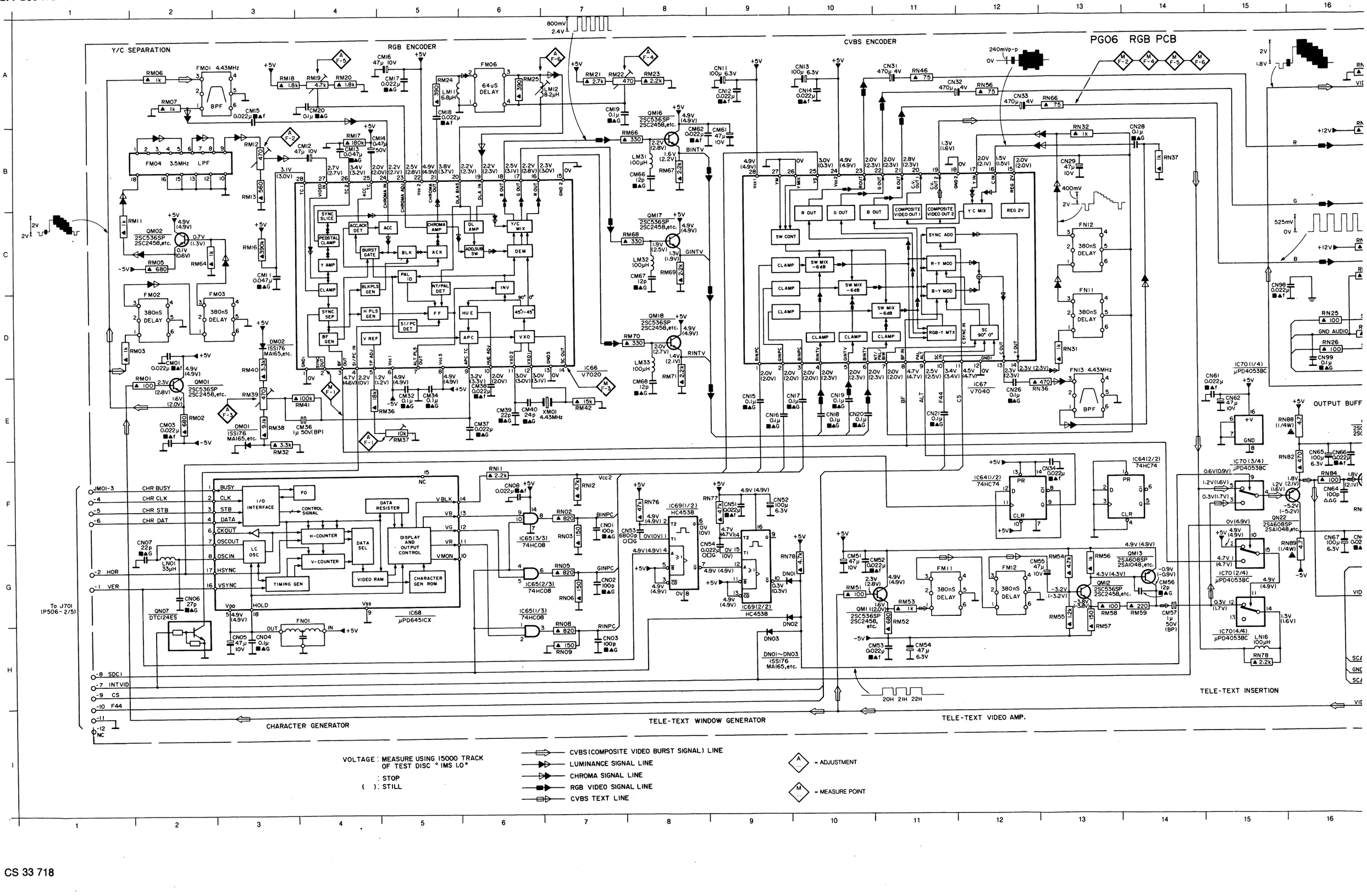


C801	G8	RU12	A5
C802	A16	RU13	A5
C803	A16	RU16	A4
C804	G11	RU21	C5
C805	F12	RU22	B5
C806	F16	RU23	B5
C807	F16		
C808	F16		
C809	G16		
C810	G15		
C811	F15		
C812	E11		
C813	C9		
C814	B8		
C815	C11		
C816	E10		
C817	D10		
C818	D8		
C819	G14		
C820	H14		
C821	B9		
C822	C9		
C830	G9		
C831	H9		
C832	E8		
C833	C8		
C834	A15		
C835	A15		
C837	G9		
C841	C16		
C842	C16		
C843	D16		
C844	D16		
C845	C11		
CT02	E5		
CT03	F6		
CT04	F6		
CU01	E5		
CU03	D3		
CU05	D6		
D801	H15		
D802	H15		
D803	C8		
D804	B10		
D805	B8		
D806	C8		
D807	G13		
D809	D10		
D809	H13		
D810	D10		
D811	E10		
D812	E10		
F801	A15		
IC72	D3		
IC72	D4		
IC74	D5		
IC75	F5		
IC91	B10		
IC91	B12		
IC91	C10		
IC91	D11		
IC91	G14		
IC92	C10		
IC92	D11		
IC93	D9		
IC93	G14		
LT01	E5		
Q801	F8		
Q802	C8		
QT01	F7		
QU01	H2		
QU02	C5		
R801	F9		
R802	G9		
R803	F12		
R804	F11		
R805	E16		
R806	E16		
R807	E16		
R808	G16		
R809	G15		
R810	G14		
R811	G15		
R812	G14		
R813	F15		
R814	E11		
R815	E12		
R816	D12		
R817	C9		
R818	C8		
R819	B8		
R820	B10		
R821	C10		
R822	D12		
R824	E10		
R826	D10		
R827	E9		
R828	F9		
R829	E9		
R830	D8		
R831	E8		
R832	F8		
R833	D8		
R834	B15		
R840	C8		
R841	C7		
R842	C12		
R846	G9		
R847	G9		
RT01	E4		
RT02	G4		
RT03	E6		
RT04	E7		
RT05	F6		
RU01	H1		
RU02	G2		
RU03	D5		
RU05	E1		
RU06	E1		
RU07	F4		
RU11	A5		

PRS.04363
T12/047
BEH. BY 45585C

CS 33 717

G. PG06 RGB SCHEMATIC DIAGRAM



CVBS ENCODER

PG06 RGB PCB

A/V CONNECTOR JN01

OUTPUT BUFFER

TELE-TEXT WINDOW GENERATOR

TELE-TEXT VIDEO AMP.

TELE-TEXT INSERTION

— CVBS(COMPOSITE VIDEO BURST SIGNAL) LINE
— LUMINANCE SIGNAL LINE
— CHROMA SIGNAL LINE
— RGB VIDEO SIGNAL LINE
— CVBS TEXT LINE

A… - ADJUSTMENT

M… - MEASURE POINT

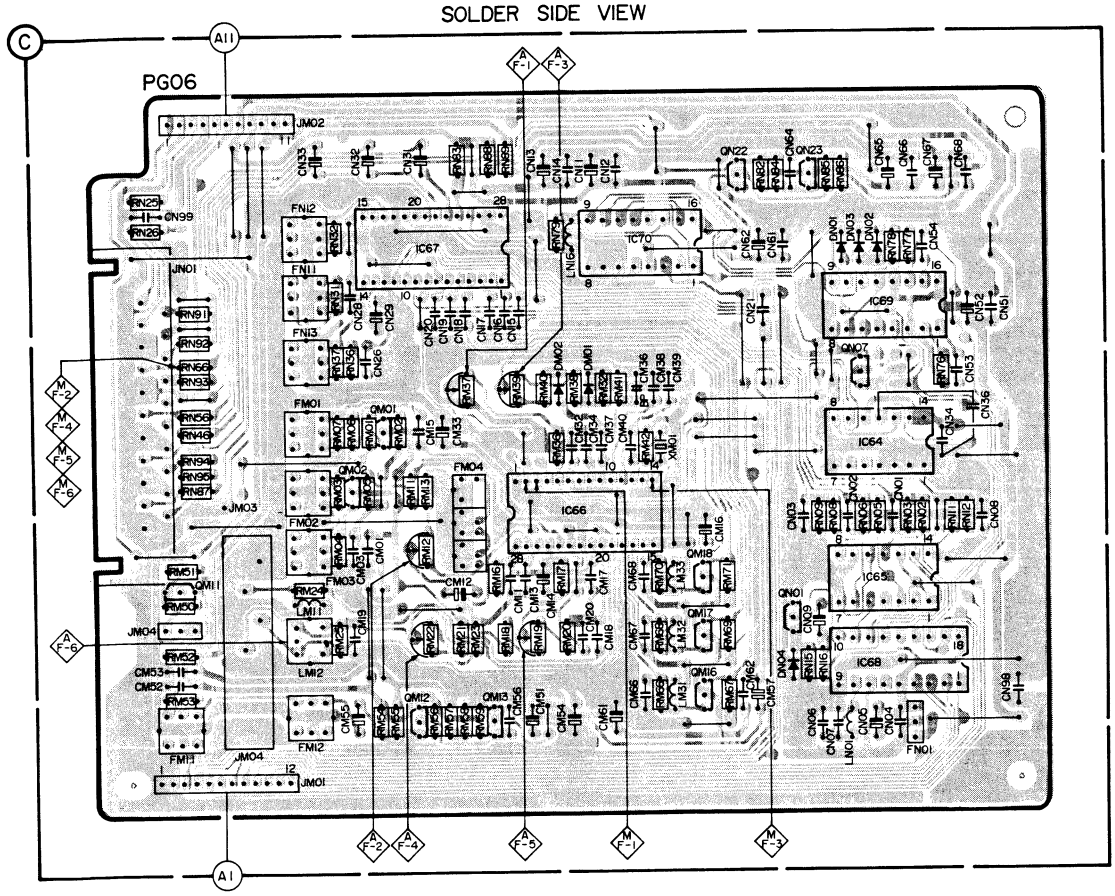
PRS.04361
T12/047
BEH. BY 45583C

CM01 D2
CM03 E2
CM11 C3
CM12 B4
CM13 B4
CM14 B4
CM15 A3
CM16 A5
CM17 A5
CM18 A5
CM20 A4
CM32 E5
CM34 E5
CM36 E4
CM37 E6
CM38 E6
CM39 E6
CM40 E6
CM51 G10
CM52 G10
CM53 H10
CM54 H11
CM55 G12
CM56 G14
CM57 G14
CM61 B9
CM62 B8
CM66 B8
CM67 C8
CM68 E8
CN01 F7
CN02 G7
CN03 H7
CN04 H3
CN05 H3
CN06 G2
CN07 F2
CN08 F6
CN11 A9
CN12 A9
CN13 A10
CN14 A10
CN15 E9
CN16 E9
CN17 E9
CN18 E10
CN19 E10
CN26 E12
CN28 B14
CN29 B13
CN31 A11
CN32 A11
CN33 A12
CN34 F12
CN51 F9
CN52 F9
CN53 F7
CN54 G8
CN61 E14
CN62 E15
CN64 F16
CN65 F16
CN66 F16
CN67 G16
CN68 G16
CN98 C15
CN99 D16
DM01 E3
DM02 D3
DN01 G9
DN02 H9
DN03 H9
FM01 A2
FM02 C2
FM03 C2
FM04 B2
FM06 A6
FM11 G11
FM12 G12
FN01 H3
FN11 D13
FN12 C13
FN13 E13
IC64 F12
IC64 F14
IC65 F6
IC65 G6
IC66 D7
IC67 E12
IC68 G5
IC69 F8
IC69 G9
IC70 D15
IC70 F15
IC70 G15
IC70 H15
JN01 A17
LM11 A5
LM12 A7
LM31 B8
LM32 C8
LM33 D8
LN01 G2
LN16 H15
QM01 E2
QM02 C2
QM11 G10
QM12 G13
QM13 G14
QM16 A8
QM17 C8
QM18 D8
QN07 G2
QN22 F15
QN23 E16
RM01 D2
RM02 E2
RM03 D2
RM05 C2
RM06 A2
RM07 A2
RM11 C2
RM12 B3
RM13 B3
RM16 C3
RM17 B4
RM18 A3
RM19 A3
RM20 A4
RM21 A7
RM22 A7
RM23 A8
RM24 A5
RM25 A6
RM32 E3
RM36 E5
RM37 E5
RM38 E3
RM39 E3
RM40 D3
RM41 E4
RM42 E7
RM51 G10
RM53 G11
RM54 G13
RM55 H13
RM56 G13
RM57 H13
RM58 G13
RM59 G14
RM70 C2
RM84 B8
RM85 B8
RM86 C7
RM87 C8
RM88 D7
RM89 D8
RN01 F7
RN02 F7
RN03 F7
RN05 G7
RN06 G7
RN08 H7
RN09 H7
RN11 F6
RN12 F7
RN25 D16
RN26 D16
RN31 D13
RN32 B13
RN36 E12
RN37 B14
RN46 A11
RN56 A12
RN66 A13
RN76 F8
RN77 F8
RN78 G9
RN82 F15
RN84 F16
RN85 F16
RN86 F17
RN87 F17
RN88 E15
RN89 G15
RN91 D16
RN92 C16
RN93 C16
RN94 B16
RN95 A16
XM01 E7

H. PG06 RGB PCB

R	RN25 RN26 RN91～RN95 RN32 RN31 RN37 RN36 RN83 RN88 RN89 RN79 RM32 RM41 RN82 RN84～RN86 RN78 RN77 RN76	R
	RN66 RN56 RN46 RN87 RM01～RM07 RM11～RM13 RM37 RM39 RM40 RM36 RM38 RM42 RN09 RN08 RN06 RN05 RN03 RN02 RN11 RN12	
	RM50～RM53 RM24 RM25 RM54～RM59 RM21～RM23 RM16～RM20 RM66～RM71 RN15 RN16	
C	CN99 CN33 CN28 CN32 CN29 CN31 CN13 CN14 CN11 CN12 CM36 CM38 CM39 CM16 CN62 CN61 CN64 CN65～CN68 CN54 CN52 CN51	C
	CM53 CM55 CN26 CM15 CM33 CM32 CM34 CM34 CM37 CM40 CM66～CM68 CN21 CN03 CN02 CN01 CN34 CN53 CN36	
	CM52 CM03 CM19 CM01 CM12 CM11 CM56 CM13 CM51 CM14 CM54 CM20 CM17 CM18 CM61 CM62 CM57 CN09 CN06 CN07 CN05 CN04 CN08 CN98	
Q－IC	QM11 QM01 IC67 IC70 QN22 QN23 QN07 IC69	Q－IC
	QM02 QM12 QM13 IC66 QM16 QM18 QN01 IC68 IC65	
D	DM02 DM01 DN04 DN01 DN03 DN02	D
F－L－X	FN11 FN13 LM11 LN16 XM01	F－L－X
	FM11 FM01～FM03 LM12 FM12 FM04 LM31～LM33 LN01	

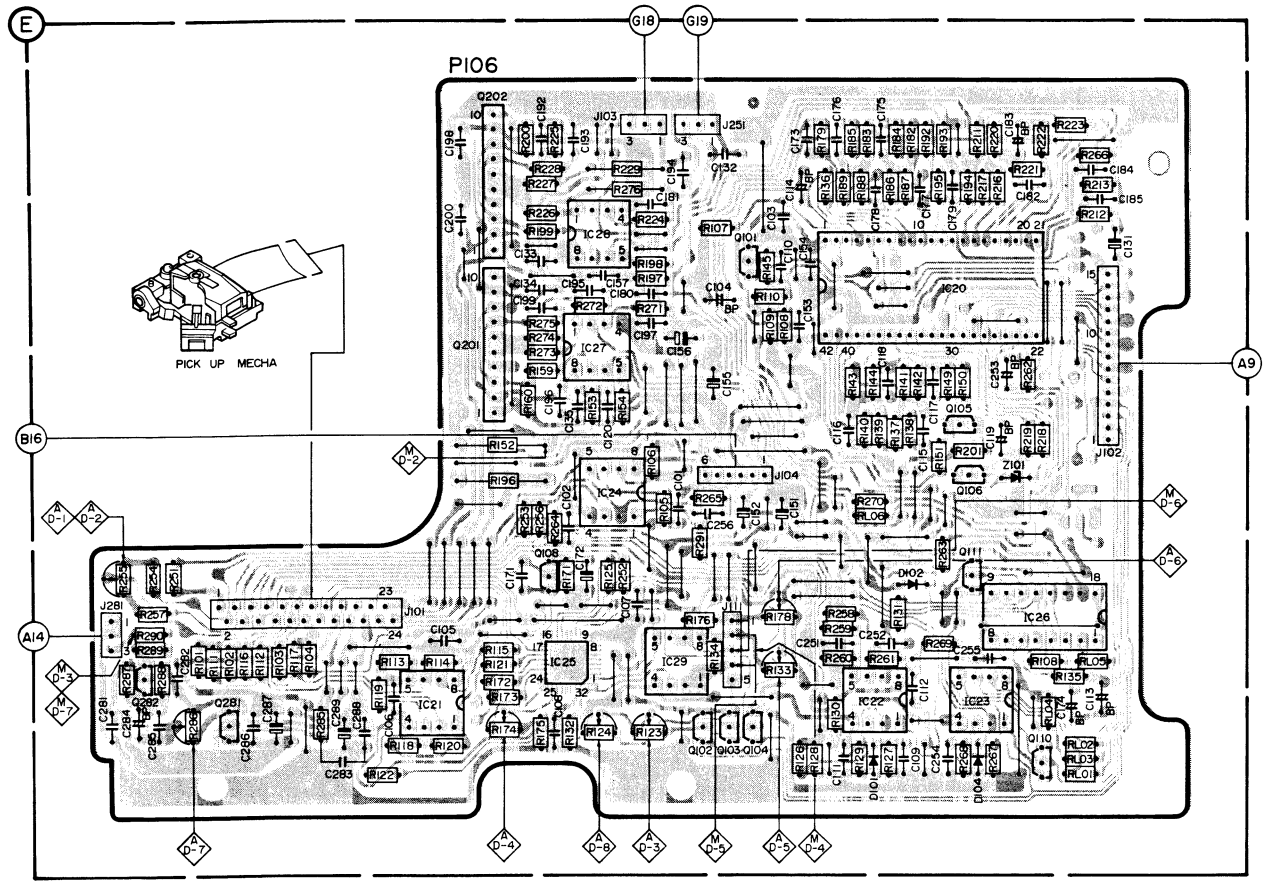
SOLDER SIDE VIEW



I. P106 SERVO PCB

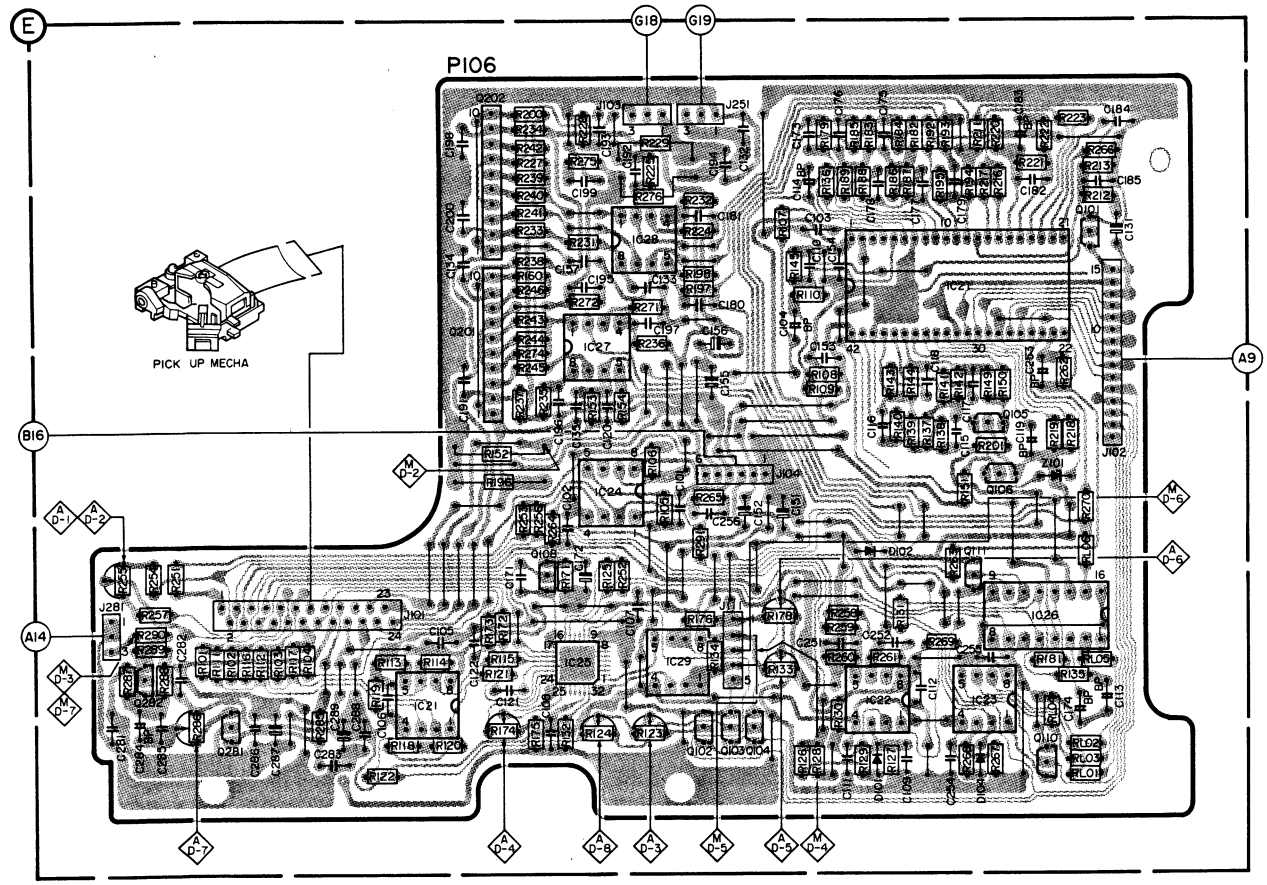
R	R200 R199 R225~R229 R272 R276 R224 R198 R197 R145 R179 R136 R182~R189 R192~R195 R211 R217 R216 R220~R223 R266 R152 R160 R159 R273~R275 R153 R154 R271 R107~R110 R270 RL06 R137~R144 R201 R262 R219 R218 R212 R213 R255 R257 R254 R251 R101~R104 R285 R113~R115 R196 R253 R256 R264 R171 R125 R252 R106 R105 R265 R178 R258~R261 R131 R263 R149~R151 R108 R135 R287~R290 R286 R111 R116 R112 R117 R118~R122 R172~R175 R132 R124 R123 R291 R176 R134 R133 R126~R130 R269 R268 R267 RL01~RL05	R
C	C198 C133 C192 C195 C193 C157 C181 C194 C132 C104 C103 C114 C173 C176 C178 C175 C177 C179 C182~C185 C131 C282 C200 C134 C199 C196 C135 C120 C180 C197 C156 C155 C110 C154 C153 C116 C118 C115 C117 C119 C253 C281 C284 C285 C286 C287 C283 C289 C288 C106 C105 C171 C108 C102 C172 C107 C101 C256 C152 C151 C251 C111 C252 C109 C112 C254 C255 C174 C113	C
Q-IC	IC27 IC28 Q101 IC20 Q105 Q106 IC26 Q282 Q281 IC21 Q108 IC25 IC24 IC29 Q102 Q104 IC22 Q111 IC23 Q110	Q-IC
D-Z	D101 D102 D104 Z101	D-Z

SOLDER SIDE VIEW



R	R200 R233~R235 R275 R228 R229 R225 R276 R232 R224 R179 R182~R189 R192~R195 R211 R220~R223 R266 R213 R227 R237~R246 R231 R272 R271 R236 R198 R197 R107~R110 R145 R136~R144 R217 R216 R219 R262 R218 R212 R255 R257 R254 R251 R101~R104 R285 R113~R115 R152~R154 R160 R274 R106 R105 R291 R265 R176 R134 R178 R258~R261 R201 R149~R151 R181 R270 R287~R290 R286 R111 R116 R112 R117 R118~R122 R196 R171~R175 R253 R256 R264 R132 R123~R125 R252 R133 R126~R130 R263 R267~R269 R135 RL01~RL06	R
C	C198 C134 C157 C199 C192~C197 C181 C180 C132 C173 C110 C103 C175~C179 C182~C185 C131 C282 C289 C288 C106 C200 C191 C135 C120 C133 C156 C155 C104 C114 C153 C154 C115~C119 C253 C281 C284 C285 C286 C287 C283 C105 C122 C121 C171 C102 C108 C172 C107 C101 C256 C152 C151 C251 C111 C252 C109 C112 C254 C255 C174 C113	C
Q-IC	Q202 IC27 IC28 IC21 Q106 Q105 IC26 Q101 Q282 Q281 IC21 Q201 Q108 IC25 IC24 IC29 Q102~Q104 IC22 Q111 IC23 Q110	Q-IC
D-Z	D101 D102 D104 Z101	D-Z

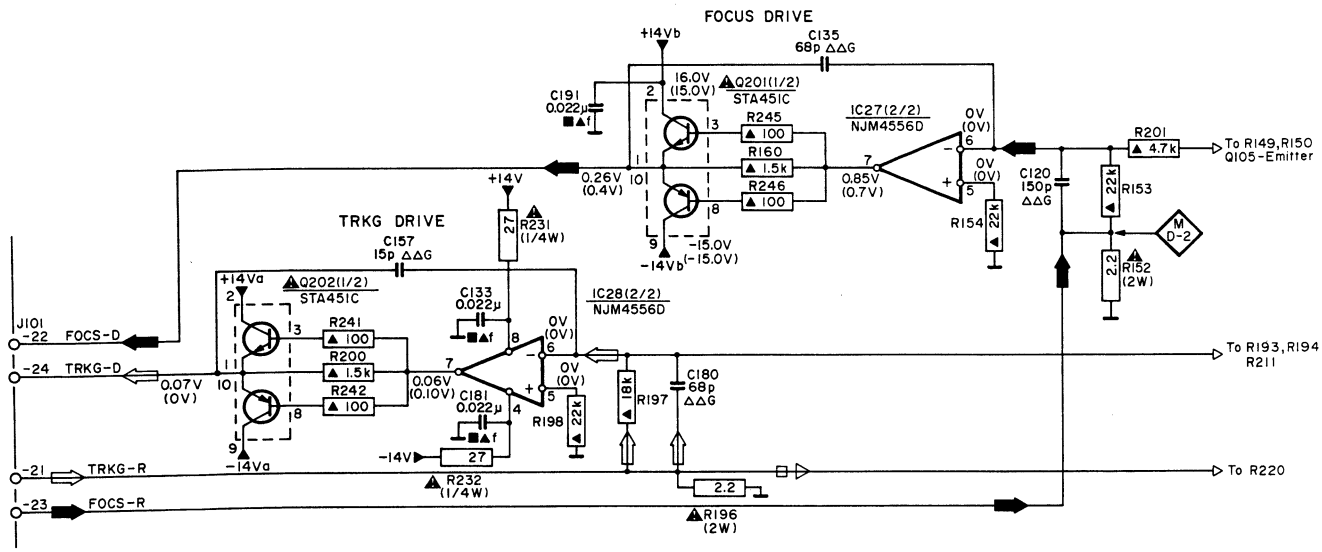
SOLDER SIDE VIEW



I.a P106 SERVO PCB

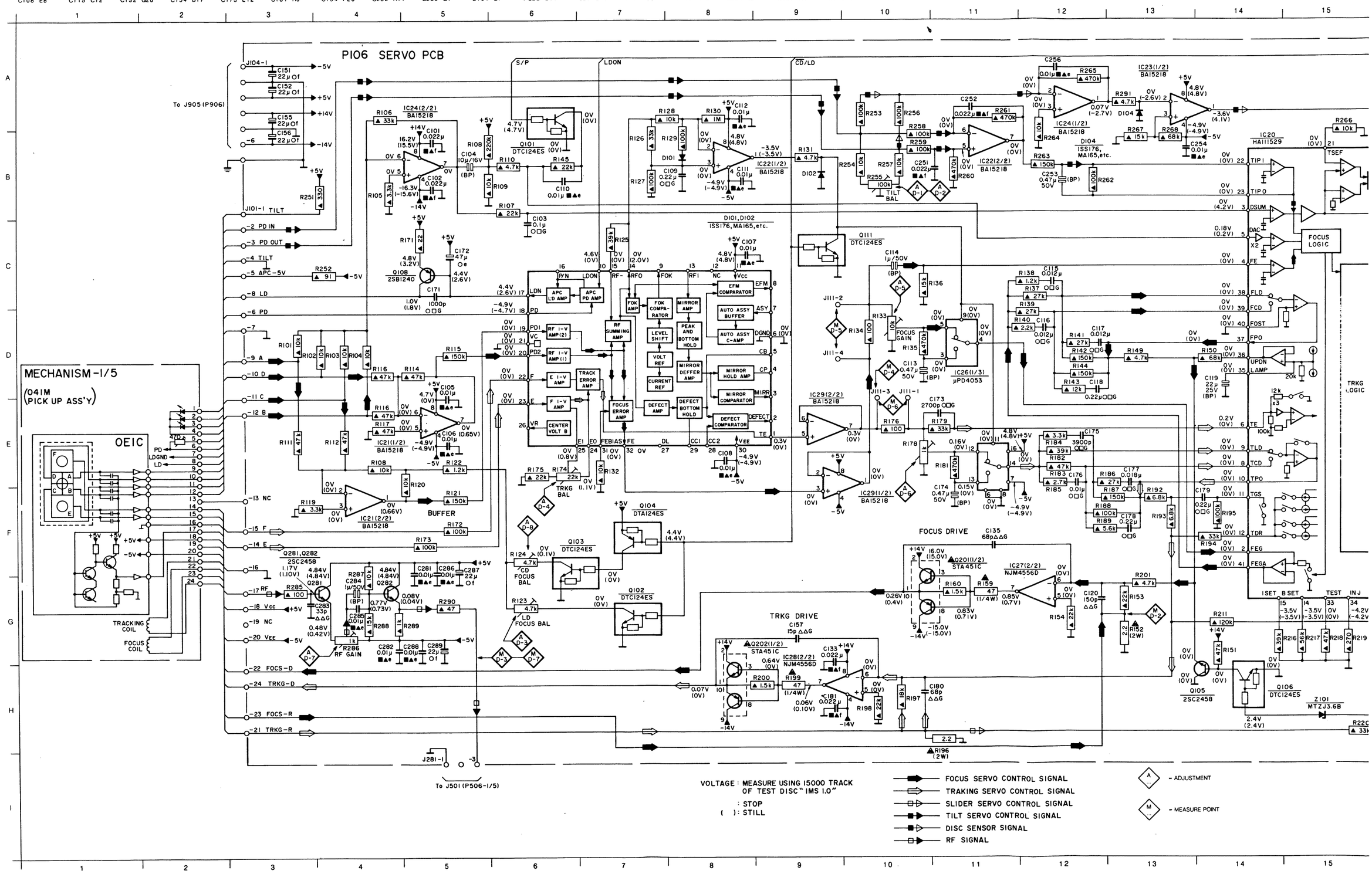
P106 SERVO SCHEMATIC DIAGRAM

MODIFIED CIRCUIT

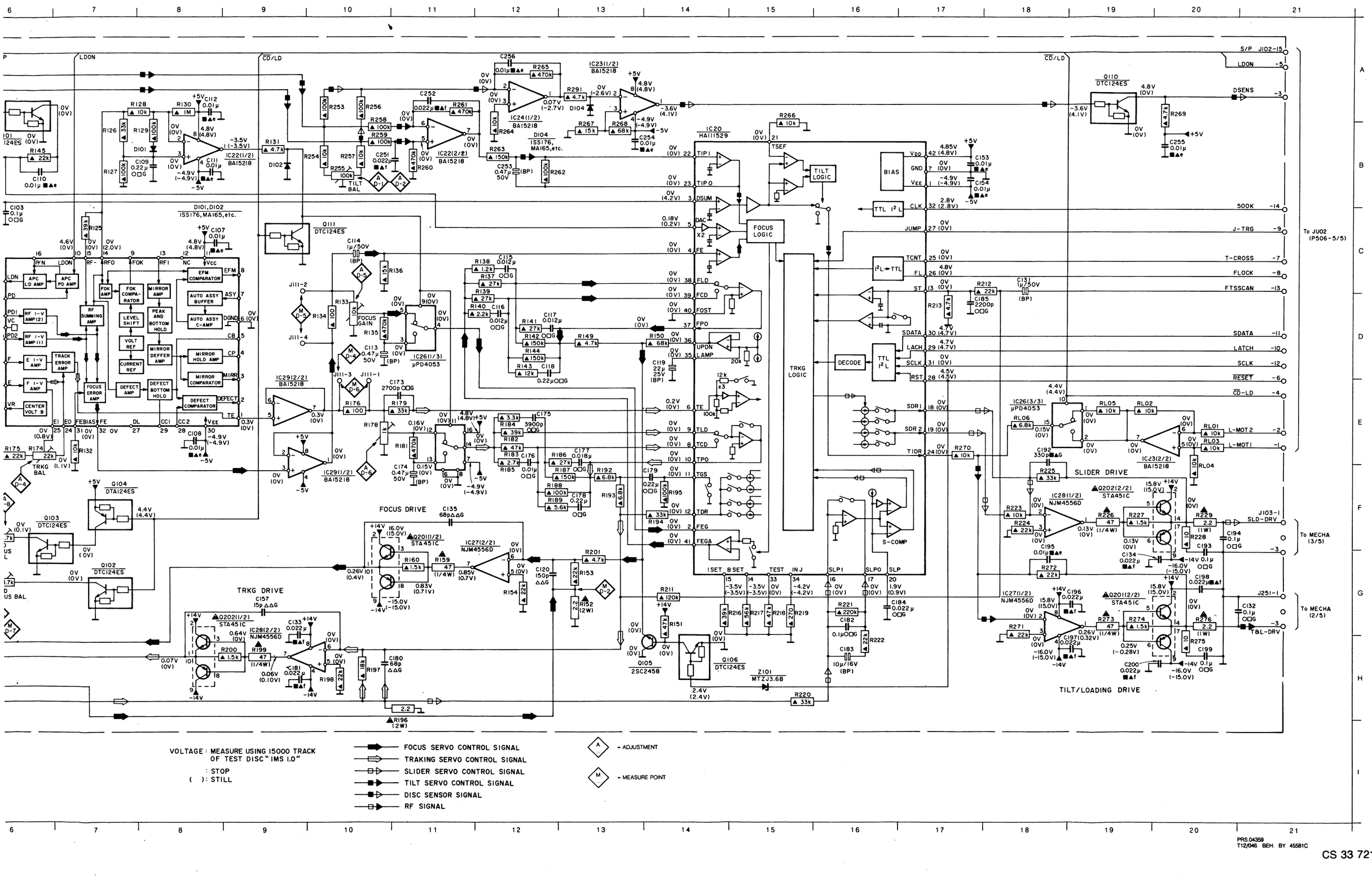


J. P106 SERVO/MECHANISM PICK-UP ASS'Y SCHEMATIC DIAGRAMS

C101 A5	C109 B7	C116 D12	C133 G9	C156 A3	C174 F11	C182 G16	C195 F18	C253 B12	C284 G4	D102 B9	I C22 B9	I C27 F11	Q102 G7	Q111 C10	Q282 G4	R107 B6	R114 D5	R121 F5	R128 A7	R135 D10	R142 D12	R152 G13	R173 F5	R183 E12	R192 F13	R198 H10
C102 B5	C110 B6	C117 D12	C134 G19	C157 G9	C176 E12	C183 H16	C196 G18	C254 B13	C285 G4	D104 A13	I C23 A13	I C27 G18	Q103 F6	Q201 F11	R101 D3	R108 B5	R115 D5	R122 E5	R129 B7	R136 C10	R143 D12	R153 G13	R174 E6	R184 E12	R192 F13	R199 H9
C104 B5	C111 B8	C118 D12	C135 F11	C171 C5	C177 E13	C184 G16	C197 H18	C255 B20	C286 F5	D104 B12	I C23 E19	I C28 F18	Q104 F7	Q201 G19	R102 D3	R108 E4	R115 F3	R123 G6	R130 A8	R137 C12	R144 D12	R154 G12	R175 E6	R185 F12	R193 F13	R200 H8
C105 D5	C112 A8	C119 D14	C151 A3	C171 C5	C178 F13	C185 D17	C198 G20	C256 A12	C287 F5	I C20 B14	I C24 A12	I C28 G9	Q105 H13	Q202 F19	R103 D4	R109 B6	R116 D4	R124 F6	R131 B9	R138 C12	R145 B6	R159 G11	R178 E10	R186 E12	R194 F14	R201 G13
C106 E5	C113 D10	C120 G12	C153 A3	C172 C5	C179 F13	C192 E18	C199 H20	C281 F5	C288 G5	I C21 E4	I C24 A5	I C29 D9	Q106 H14	Q202 G8	R104 D4	R110 B6	R117 E4	R125 C7	R132 E7	R139 C12	R149 D13	R160 G11	R179 E11	R187 F12	R195 F14	R211 G14
C107 C8	C114 C10	C121 C18	C153 B17	C173 D10	C180 H10	C193 F20	C200 H19	C282 G4	C289 G5	I C21 F4	I C26 D11	Q101 B6	Q108 C4	Q251 B10	R105 B4	R111 E3	R126 B7	R133 D10	R140 D11	R150 D14	R161 C5	R181 E11	R196 H11	R212 C17			
C108 E8	C115 C12	C132 G20	C154 B17	C173 E12	C181 H9	C194 F20	C252 A11	C283 G4	D101 B7	I C22 B11	I C26 E18	Q110 A19	Q281 G3	R106 A4	R112 E4	R120 E5	R127 B7	R134 D10	R141 D12	R151 G14	R172 F5	R182 E12	R189 F12	R197 H10	R213 D17						



D102 B9	I C22 B9	I C27 F11	Q102 G7	Q111 C10	Q201 F11	Q282 G4	R107 B6	R114 D5	R121 F5	R128 A7	R135 D10	R142 D12	R152 G13	R173 F5	R183 E12	R192 F13	R198 H10	R216 G14	R223 F18	R251 B3	R258 A10	R264 B12	R272 G18	R287 F4	RL03 E20
D104 A13	I C23 A13	I C27 G18	Q103 F6	Q201 G11	Q202 G8	R101 D3	R108 B5	R115 D5	R122 E5	R129 B7	R136 C10	R143 D12	R153 G13	R174 E6	R184 E12	R192 F13	R199 H9	R217 G15	R224 F18	R252 C4	R259 B10	R266 A15	R273 G19	R288 G4	RL04 E20
D104 B12	I C23 E19	I C28 F18	Q104 F7	Q202 F19	Q251 B10	R102 D3	R108 E4	R115 F3	R123 G6	R130 A8	R137 C12	R144 D12	R154 G12	R175 E6	R185 F12	R193 F13	R200 H8	R218 G15	R225 F18	R253 A10	R260 B11	R267 A13	R274 G19	R289 G5	RL05 E19
C20 B14	I C24 A12	I C28 G9	Q105 H13	Q281 G3	R103 D4	R109 B6	R116 D4	R123 F6	R131 B9	R138 C12	R145 B6	R155 G11	R178 E10	R186 E12	R194 F14	R201 G13	R211 G14	R219 G15	R226 F19	R254 B10	R261 A11	R268 A13	R275 H20	R290 G5	RL06 E18
C21 E4	I C24 A5	I C29 D9	Q106 H14	R104 D4	R110 B6	R117 E4	R125 C7	R132 E7	R139 C12	R146 C12	R156 G11	R179 E11	R187 F12	R195 F14	R202 G13	R212 C17	R220 H15	R227 F19	R255 B10	R262 B12	R269 A20	R276 G20	R291 A13	Z101 H15	
C21 F4	I C26 D11	I C29 F10	Q108 C4	R105 B4	R111 E3	R118 E4	R126 B7	R133 D10	R140 D11	R147 C12	R150 D14	R157 G11	R180 E12	R188 F12	R196 H11	R203 F20	R213 D17	R221 G16	R228 F20	R256 A10	R263 A12	R270 E17	R285 G3	RL01 E20					
C22 B11	I C26 E18	Q101 B6	Q110 A19	R106 A4	R112 E4	R120 E5	R127 B7	R134 D10	R141 D12	R149 G14	R151 G14	R172 F5	R182 E12	R189 F12	R197 H10	R204 F20	R222 H16	R229 F20	R257 B10	R263 B12	R271 G18	R286 G4	RL02 E19						



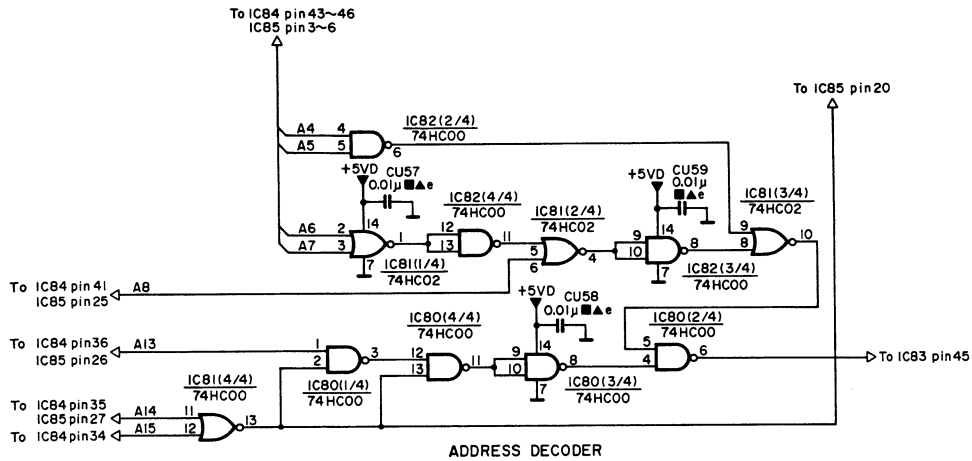
PRS.04359
T12/046 BEH. BY 45581C

CS 33 721

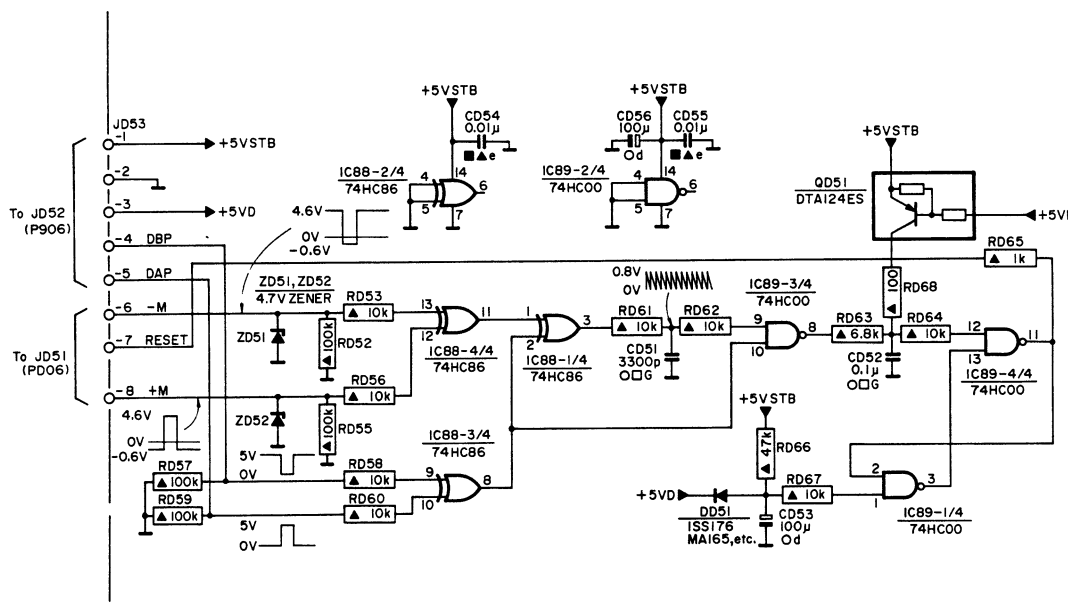
I.a

PU06 OTP μ-COM SCHEMATIC DIAGRAM

MODIFIED CIRCUIT



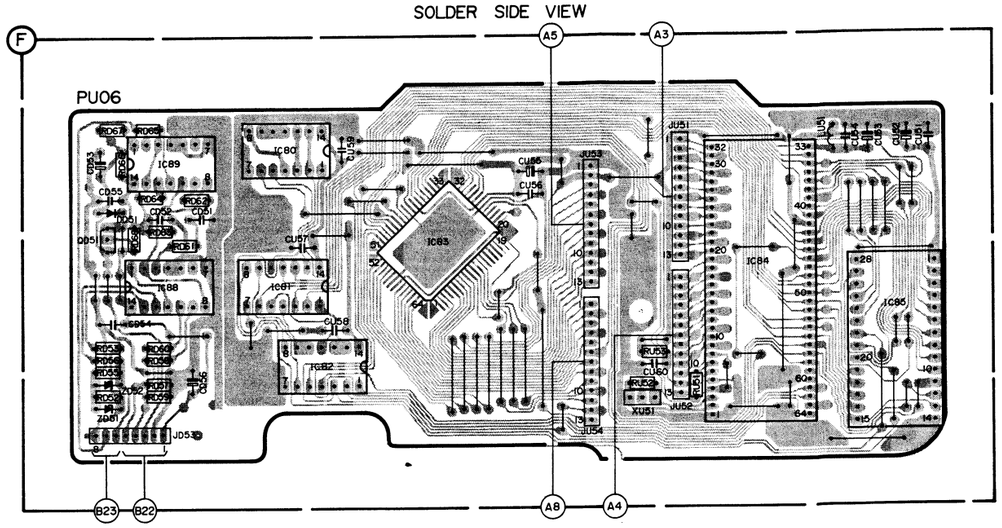
ADDITIONAL CIRCUIT



K.a

R	RD53 RD61~RD68	
	RD52 RD55~RD60 RU52 RU53 RU51	
C	CD53 CD55 CD52 CD51 CU57 CU59 CU55 CU54 CU53	C
	CD54 CD56 CU58 CU56 CU60 CU52 CU51	
IC – Q	QD51 IC88 IC89 IC80 IC82 IC83 IC84 IC85	IC – Q
D-L-X-Z	ZD51 ZD52 DD51 XU51 LU51	D-L-X-Z

SOLDER SIDE VIEW



P906 POWER SUPPLY/P916 TRANSFORMER/PD06 SPINDLE DRIVE SCHEMATIC DIAGRAMS

C901 F1 C902 F2 C903 E5 C904 E5 C905 E6 C906 E6 C907 F3 C908 F4 C909 H4 C910 H4 C911 D6
C912 E6 C913 D7 C914 D7 C915 H5 C916 H5 C917 H8 C918 H9 C919 H11 C920 H11 C921 F10 C922 F10
C923 F11 C924 G11 C925 F4 C926 G3 C927 F12 C928 G12 C929 G4 C930 E7 C931 E7 C932 D7 C933 D8
C934 E8 C935 D9 C936 D12 C937 H7 C938 H8 C941 F9 C942 F9 CD01 A4 CD02 B4 CD03 B4 CD04 C4
CD05 B8 CD06 C8 CD07 A8 CD08 C8 CD09 B2 CD10 B2 CD13 C5 D901 E8 D902 G4 D903 F4 D904 F4
D905 F4 D906 G3 D907 G3 D912 H4 D913 D8 D914 D8 D915 D8 D916 E8 D919 H7 D920 H8 D922 F9
D923 H8 D924 H9 D925 D11 D926 F5 D927 G12 D928 C12 D929 D7 D930 D8 D933 D9 DD01 B5 DD02 C5
DD03 A5 DD04 B5 DD05 B5 DD06 C5 DD07 A7 DD08 B7 DD09 B7 DD10 C7 DD52 C11 F901 E5 F902 F3
F903 F3 IC86 G8 IC87 H9 L901 F1 L902 E5 LD01 A8 LD02 C8 LD03 A7 LD04 C7 Q901 H10 Q902 H10
Q903 F10 Q904 G10 Q905 F11 Q906 G11 Q907 G4 Q908 E9 Q909 F11 Q911 D11 Q912 D12 Q913 D8
Q914 E6 Q915 F5 Q916 F6 QD01 A3 QD02 B3 QD03 B3 QD04 C3 QD05 A5 QD06 B5 QD07 B5 QD08 C5
QD09 A6 QD10 B6 QD11 B6 QD12 C6 R904 D6 R905 E6 R907 F10 R908 F10 R909 G9 R910 G9 R911 F6
R912 F6 R913 D10 R914 D11 R915 C11 R916 C12 R917 D8 R918 E9 R919 D9 R920 D9 R921 D9 R922 H10
R923 H10 R926 G11 R927 F12 R929 G12 R930 D11 R931 F6 R932 G6 R933 H6 R934 G5 R935 H5 R937 F8
R938 E6 RD01 B1 RD02 A2 RD05 B2 RD06 C2 RD07 A4 RD08 C4 RD09 B4 RD10 C4 RD11 A4 RD12 B4
RD13 B4 RD14 C4 RD15 A5 RD16 B5 RD17 B5 RD18 C5 RD51 A6 RD54 B7 T901 D2 WO01 F1 Z901 F11
Z902 F11 Z903 F11 Z904 F9 Z905 E9 Z906 D9 Z907 C10

1 2 3 4 5 6 7 8 9 10 11 12 13 14

To JD53 (PU06)

PLAY MODE 63.5µs
DAP
DAN
DBP
DBN

PD06-1/2 SPINDLE DRIVE AND RESET PCB

J906(2/2) JD01 (1/3) JD02 (1/3) JD51-1/2 JD02(2/3) JD01(2/3)

To J301 (P506-4/5)

RD02 15k, RD03 10k, RD05 15k, RD06 10k, RD01 2.2k, RD04 2.2k, RD07 3.3k, RD09 3.3k, RD08 2.2k, RD10 2.2k, RD11 10k, RD12 1k, RD13 10k, RD14 1k, RD15 47, RD16 47, RD17 47, RD18 47, RD51 10k, RD54 10k

CD01 3300p CG, CD02 3300p CG, CD03 3300p CG, CD04 3300p CG, CD09 120p ΔΔG, CD10 120p ΔΔG, CD13 4.7p ■ΔG

DD01 DD02 DD03 DD04 DD05 DD06 DD07 EK16, DD08 EK16, DD09 EK16, DD10 EK16, LD03, LD04

QD01 2SC1923, QD02 2SA1005, QD03 2SC1923, QD04 2SA1005, QD05 2SA1048, QD06 2SC2458, QD07 2SA1048, QD08 2SC2458, QD09 2SB1185, QD10 2SD1762, QD11 2SB1185, QD12 2SD1762

15.7V, 0V, 4.8V, -15.8V, 4.7V, 15.6V, 15.4V [14.3V], -15.6V [-14.2V]

SPINDLE DRIVE

DD01~DD06 ISS176,etc.

+5VD

JD52-1/2 To JD53 (PU06)

LD01 2.6mH, LD02 2.6mH

PLAY MODE 63.5µs +14V 0V -14V

-2.0V [6.6V] -1.4V [6.4V]

CD05 22µ 25V (B.P), CD06 22µ 25V (B.P), CD07 330µ OF, CD08 330µ OF

JD03 +M -M To CN5 (MECHA 2/5)

P906 POWER SUPPLY PCB

PD06-2/2 SPINDLE DRIVE AND RESET PCB

To JD53 (PU06)

JD51-2/2 JD52-2/2 JD02 (3/3) JD01 (3/3)

DD52 ISS176,MA165,etc. RESET CIRCUIT

Z907 MTZJ3.6A, R914 100, R913 390, Q911, Q911,Q912 2SC2458, R915 4.7k, R930 22k, R916 4.7k, Q912, C936 100µ Od, D928 ISS176, MA165,etc., D925 ISS176, MA165,etc.

1.3V 0.76V 5.0V

+5VD To JD53 (PU06)

J904: AC1, -33V, AC2, To WF02 (PF06); RESET, +5VSTB, STANDBY

J905: -5V, +5VA, +14V, -14V, To J104 (P106)

J906(1/2): -12V, -5V, +5VA, +12V, N.C, +5VSTB, To J301 (P506-4/5)

D927 ISS176, MA165,etc. +5VD

AC 2 AC 1 R920 470, R921 470

Z906 MTZJ6.8C RD6.8JB2 -25.5V -33V

Q913 2SB1240 -43V [-40V] -32.6V

R917 4.7k, R918 1k, -33V, D933, C933 100µ OG, C934 10µ 50V, Z905 MTZJ33D, C935 10µ 50V, R919 10k

D929,D930,D933 1D3

D930, D929, R936 10 (1/4W) -14V

C932 100µ OG, C931 3300µ Of

D913~D916 1D3

C911 100µ OG, D914, R904 47 (1/4W) 28V [26V], C913 330µ OF, D913, C912 100µ OG, D915, R905 47 (1/4W) -28V [-27V], C914 330µ OF, D916

C903 0.01µ ΔΔG, L902, C904 0.01µ ΔΔG, C905 0.01µ ΔΔG, C906 0.01µ ΔΔG, D901 RBA402 15.4V [14.3V] -15.6V [14.2V], C930 3300µ Of

Q914 2SB1240, D926 4.9V 5.0V, R912 4.7k, R911 1k, Q915 2SC2458, Q916 DTC124ES 0.6V 0.1V, R931 4.7k

Q908 2SD2037

R937 1.8 (1/4W) 8.3V 5.0V, D922 ISS176 MA165,etc. 5.6V, C942 22µ Of, C941 22µ Of, Z904 MTZJ6.8A

R909 3.3k, R910 3.3k

Z903 MTZJ4.7B RD4.7JB2 +5VA

8.3V 4.8V Q905 2SD1913

12.3V 5.5V Q903 2SC2458 6.1V

R907 1.5k, Z901,Z902 MTZJ6.8A, C921 22µ Of, Z901, C922 22µ Of, Z902, R908 1.5k, -6.1V, C924 22µ Of, -12.1V -5.5V, Q904 2SA1048, -11.8V -4.9V, Q906 2SB1274

C923 22µ Of, Z903, Q909 2SA1048, 0.8V, C927 22µ Of, C928 22µ Of, R926 4.7k, R927 22k, R929 10k, -5V

16.8V 12.2V +12V, R922 100, 12.8V, Q901 2SD1913, C919 22µ Of, C920 22µ Of, R923 100, -12.4V, Q902 2SB1274, -15.6V -11.8V, -12V

TRANSFORMER PCB P916

W001, L901, C901 0.01µ 400V, C902 0.01µ 400V, 0V, 220V, 240V

(/00R/02R/19R) ONLY, /05R ONLY

T901

AC4.13V → AC1, AC2

F901 T2A, J911 J912

AC12.4V, AC12.4V

J913 J914, F902 T2A

AC8.4V

F903 T2A, J916 J915, C908 0.01µ ΔΔG, C907 0.01µ ΔΔG, D905 8.3V, C925 6800µ Oe, D904, D903, D902, D906, D907, R939 (1/4W), Q907 2SD1913 4.8V 5.5V, C926 3300µ Oe, C929 22µ Of

D902,D903 EK16, D904~D907 1D3

AC14.6V, AC14.6V

C909 0.01µ ΔΔG, C910 0.01µ ΔΔG, D912 RB152, R934 (1/4W) 17.0V, C915 3300µ 25V, C916 3300µ 25V, -16.6V, R935 (1/4W), R932 4.7k, R933 33k

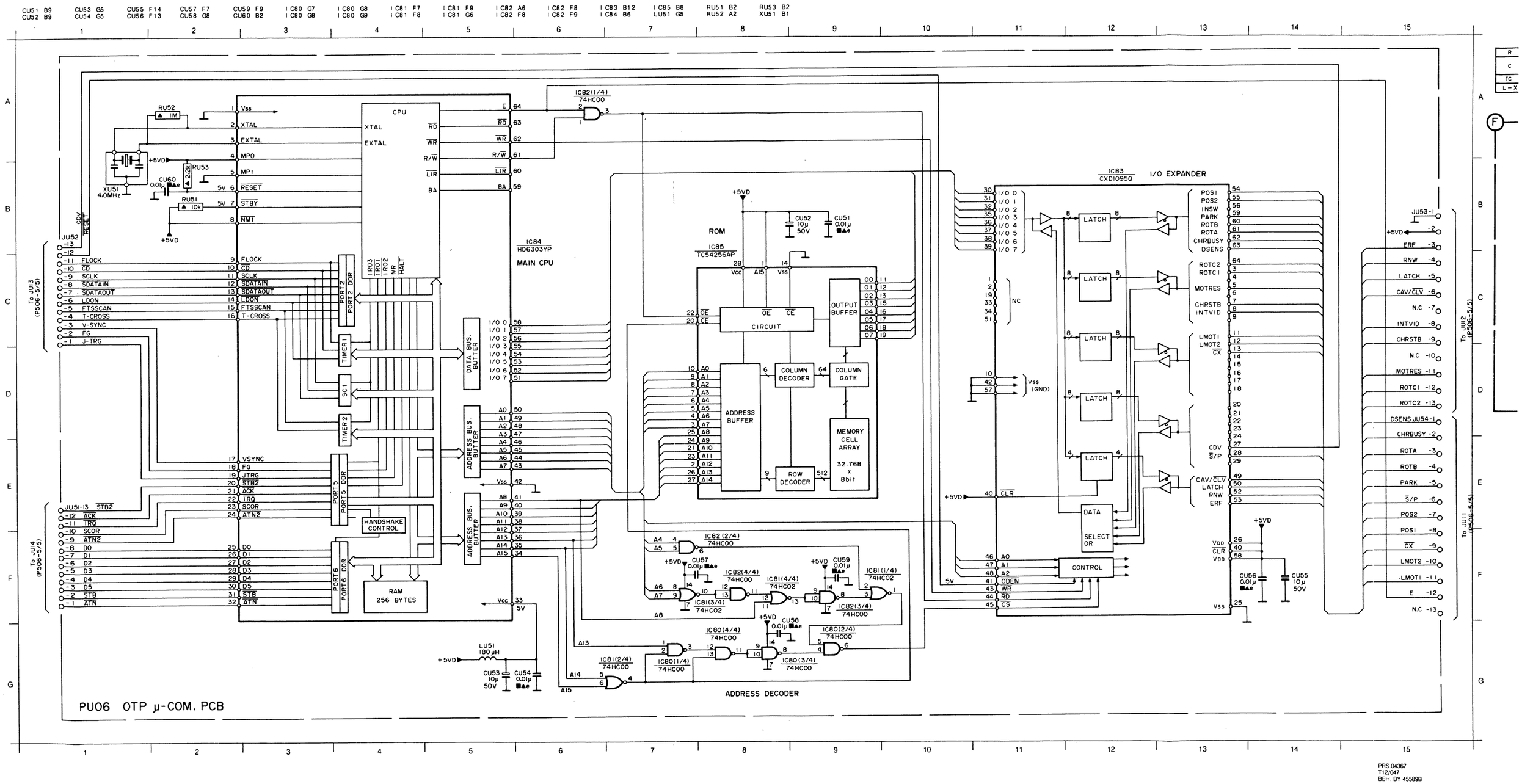
IC86 NJM78L12A IN OUT 12.9V, D919, C937 0.01µ ΔΔG, D923, C917 22µ Of, IC87 NJM79L12A IN OUT -12.6V, D920, C938 0.01µ ΔΔG, D924, C918 22µ Of

D919,D920,D923,D924 ISS176,MA165,etc.

VOLTAGE : MEASURE USING 15000 TRACK OF TEST DISC "IMS 1.0"
: STOP
[ ] : PLAY

CS 38 493

K. PU06 OTP μ-COM SCHEMATIC DIAGRAM & PCB



CS 33 722

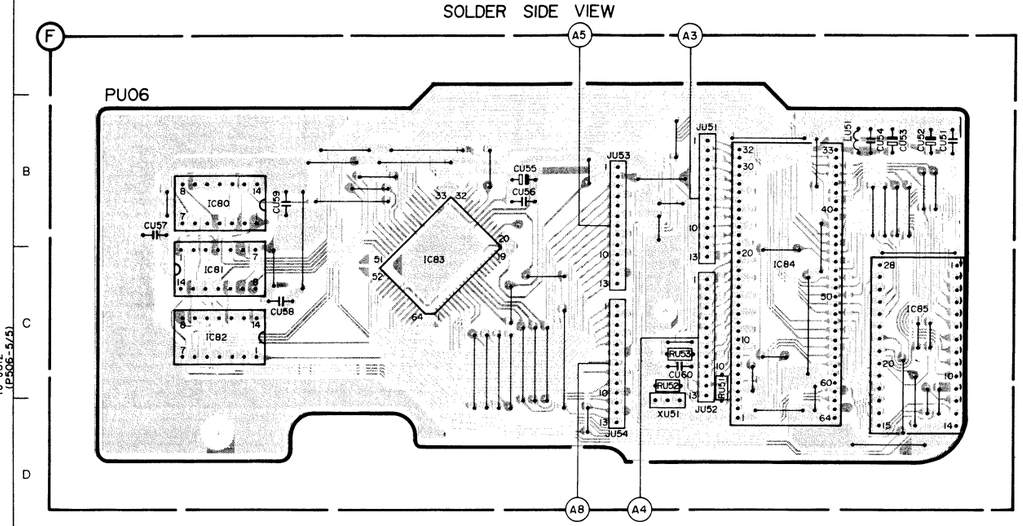
I C85 B8
LU51 G5

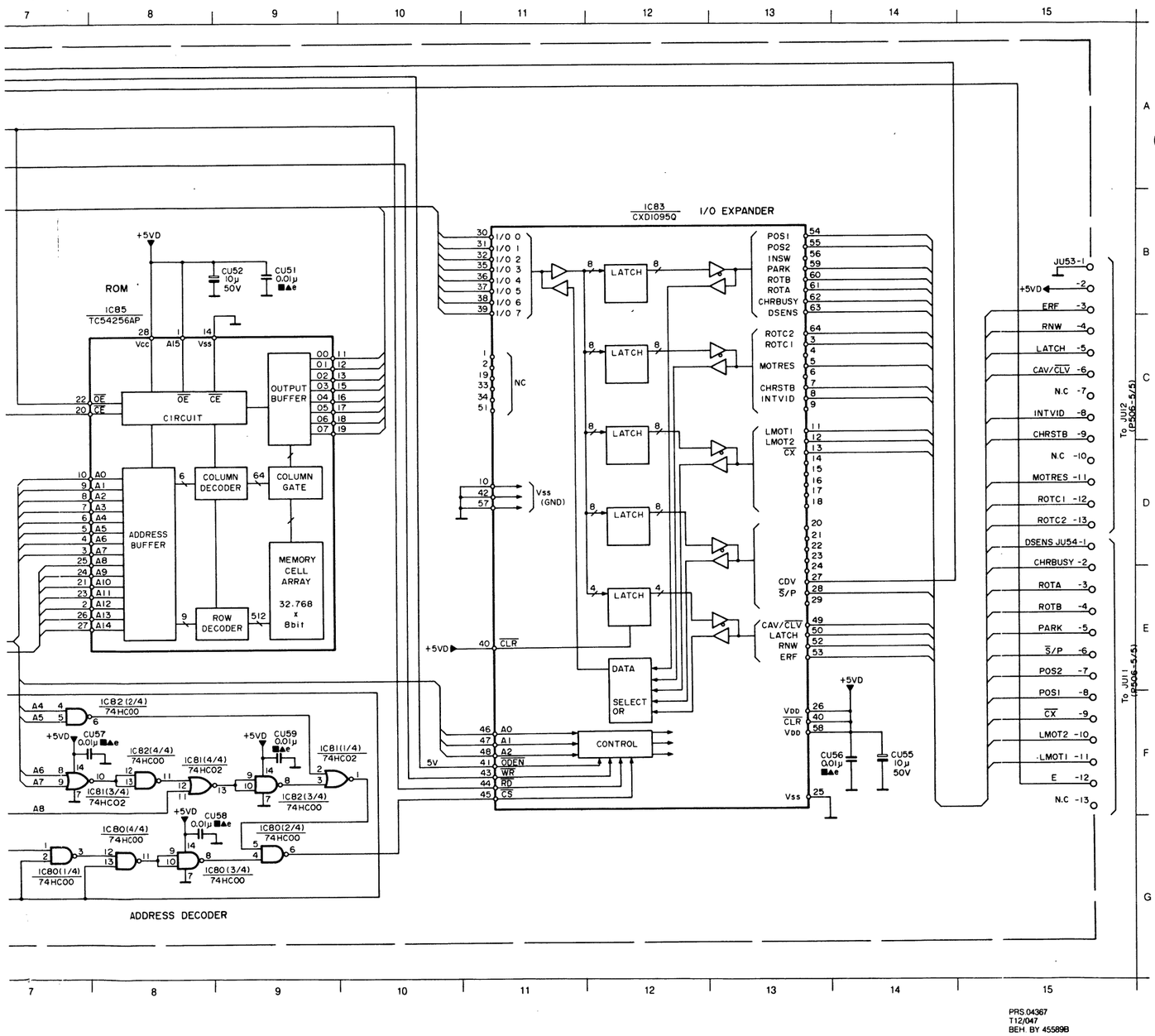
RU51 B2
RU52 A2

RU53 B2
XU51 B1

R	RU52 RU53 RU51							R
C	CU57	CU59		CU55			CU54 CU53	C
		CU58		CU56	CU60		CU52 CU51	
IC	IC80~IC82		IC83			IC84	IC85	IC
L-X				XU51		LU51		L-X

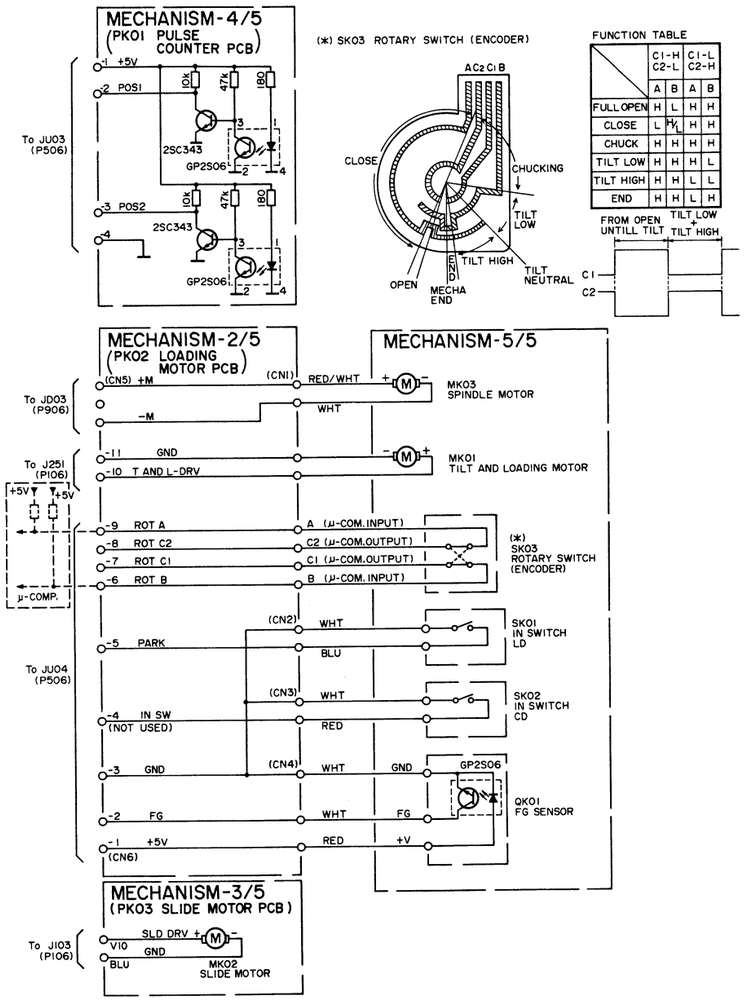
SOLDER SIDE VIEW

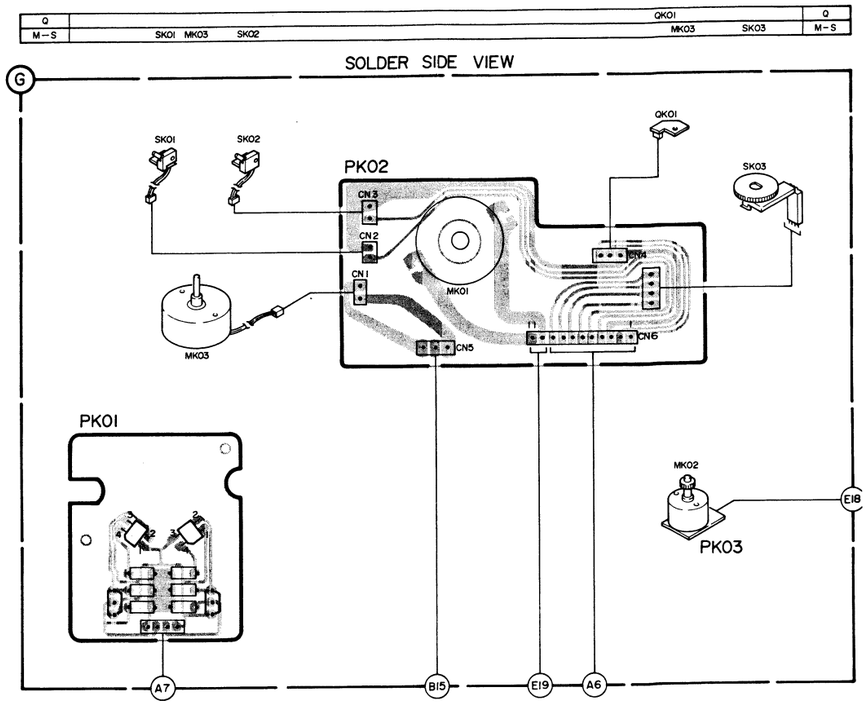




PRS.04367
T12/047
BEH. BY 45589B

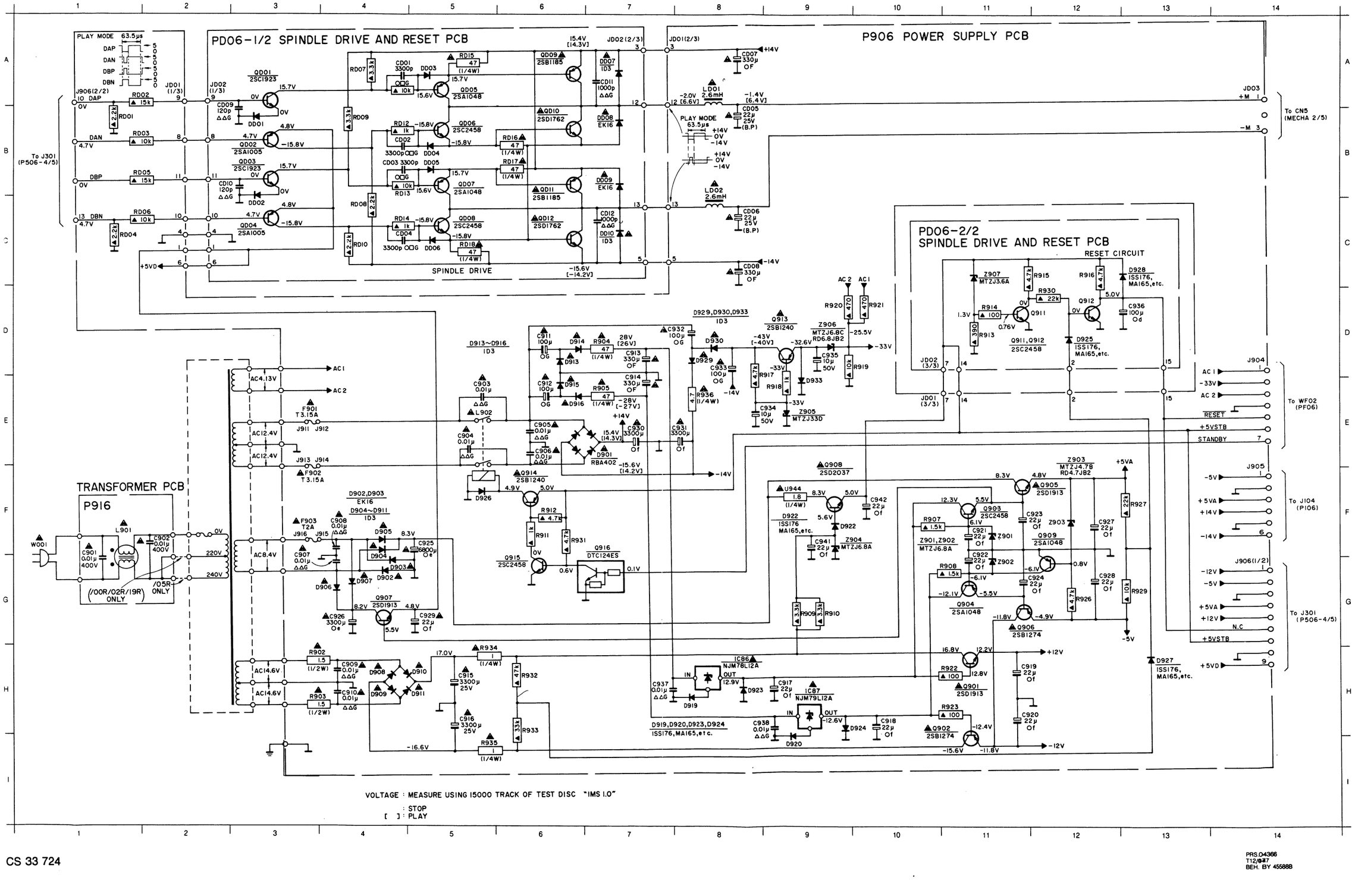
L. MECHANISM SCHEMATIC DIAGRAMS & PCBs





M. P906 POWER SUPPLY/P916 TRANSFORMER/PD06 SPINDLE DRIVE SCHEMATIC DIAGRAMS

C901 F1 C902 F2 C903 E5 C904 E5 C905 E6 C906 E6 C907 F3 C908 F4 C909 H4 C910 H4 C911 D6 C912 E6 C913 D7 C914 E7 C916 H5 C917 H9 C918 H10 C919 H11 C920 H11 C921 F11 C922 G11 C923 F11 C924 G11 C925 F5 C926 G4 C927 F12 C928 G12 C929 G5 C930 E7 C931 E7 C932 D7 C933 D8 C934 E8 C935 D9 C936 D13 C938 H8 C941 F9 C942 F10 CD01 A4 CD02 B4 CD03 A8 CD03 B4 CD04 C4 CD06 C8 CD07 A8 CD08 C8 CD09 A2 CD10 B2 CD11 A7 CD12 C7 D901 E7 D902 G4 D903 G4 D904 G4 D905 F4 D906 G4 D907 G4 D908 H4 D909 H4 D910 H4 D911 H4 D913 D6 D914 D6 D915 E6 D916 E6 D918 H8 D919 H8 D920 I 9 D923 H8 D924 H9 D925 D12 D926 F5 D927 H13 D928 C13 D929 D8 D930 D8 D933 E9 DD01 B3 DD02 B3 DD03 A5 DD03 B5 DD04 B5 DD06 C5 DD07 A7 DD08 B7 DD09 B7 DD10 C7 F901 E3 F902 F3 F903 F3 I C86 H8 I C87 H9 L901 F1 L902 E5 LD01 A8 LD02 B8 Q901 H11 Q902 I 10 Q903 F11 Q904 G11 Q905 F12 Q906 G11 Q907 G4 Q908 F9 Q909 F12 Q911 D12 Q912 D12 Q913 D8 Q914 F6 Q915 G6 Q916 F7 QD01 A3 QD02 B3 QD03 B3 QD04 C3 QD05 A5 QD06 B5 QD07 B5 QD08 C5 QD09 A6 QD10 A6 QD11 B6 QD12 C6 R901 H3 R902 H3 R904 D7 R905 E7 R907 F10 R908 G10 R909 G9 R910 G9 R911 F6 R912 F6 R913 D11 R914 D11 R915 C12 R916 C12 R917 D8 R918 E9 R919 D10 R920 D9 R921 D10 R922 H10 R923 H10 R926 G12 R927 F13 R929 G13 R930 D12 R931 F6 R932 H6 R933 I 6 R934 H5 R935 I 5 RD01 B1 RD02 A2 RD03 B1 RD04 C1 RD05 B1 RD06 C1 RD07 A4 RD08 C4 RD09 B4 RD10 C4 RD11 B4 RD12 B4 RD13 B4 RD14 C4 RD15 A5 RD16 B6 RD17 B6 RD18 C5 U944 F9 W001 F1 Z901 F11 Z902 G11 Z903 F12 Z905 E9 Z906 D9 Z907 C11 Z937 H7 D922Z F9

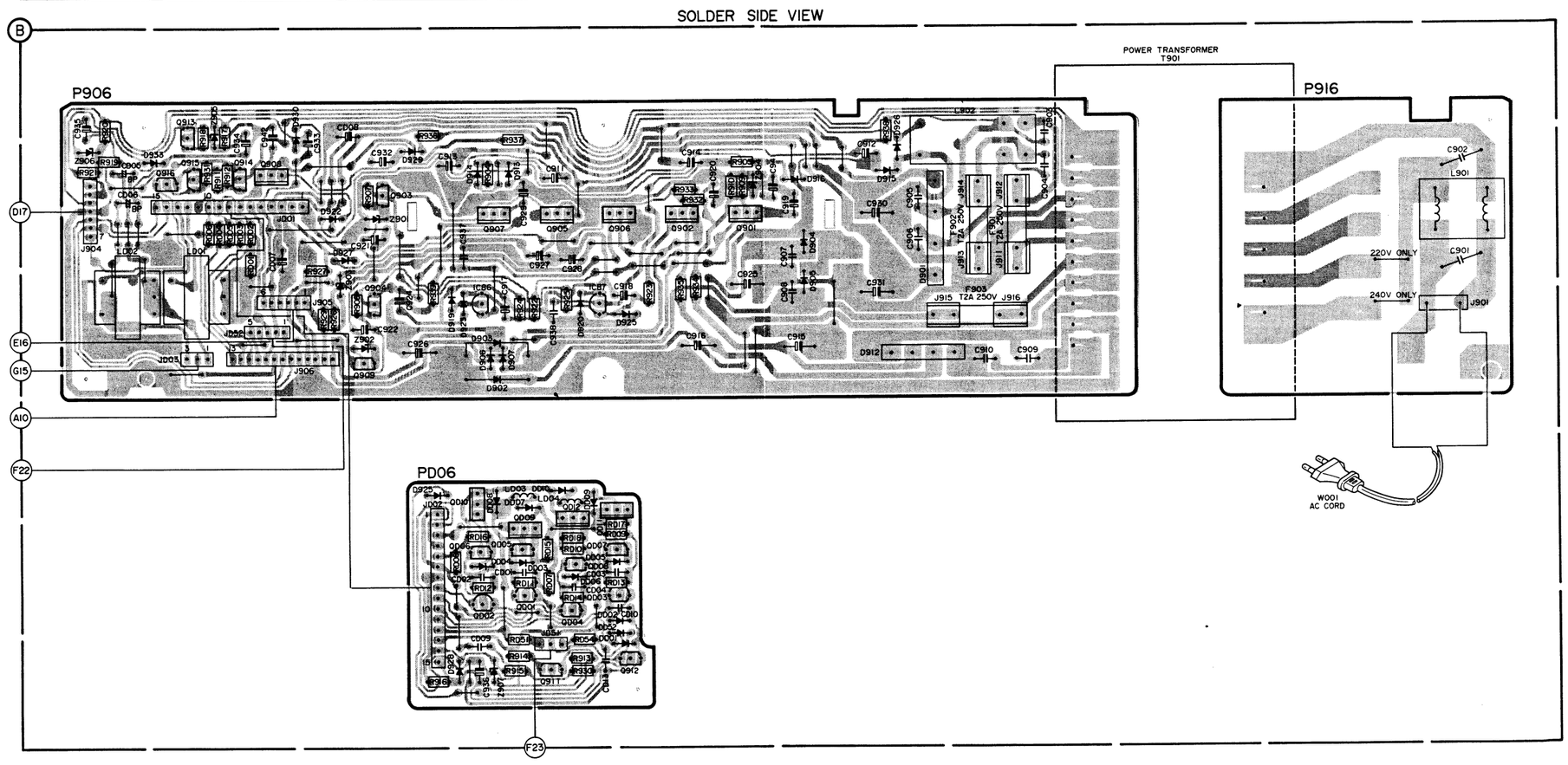


PRS.04366
T12/647
BEH. BY 455888

N.a P906 POWER SUPPLY/P916 TRANSFORMER/PD06
SPINDLE MOTOR

R	R920 R918 R917 R907 R936 R904 R937 R924 R922 R925 RD17 R923 R933 R932 R905 R938 R921 R919 R931 R911 R912 R927 R939 RD08 RD16 RD12 RD15 RD07 RD18 RD10 RD09 RD13 R935 R934 R910 R909 RD01~RD06 R929 R926 R908 R916 R915 R914 RD51 RD11 RD14 RD54 R913 R930	R
C	C935 CD05 C934 C924 C933 CD08 C932 C924 C913 C937 C917 C929 C927 C911 C938 C928 C918 C914 C920 C941 C907 C919 C912 C930 C905 C903 C902 CD06 CD07 C921 C922 C926 CD02 CD09 C936 CD01 CD04 CD13 CD03 CD10 C916 C925 C908 C915 C931 C906 C910 C909 C904 C901	C
Q-IC	Q913 Q903 IC86 Q907 Q905 IC87 Q906 Q902 Q901 Q916 Q915 Q914 Q908 Q909 Q904 QD10 QD05 QD09 QD12 QD08 QD07 QD11 QD06 QD02 QD01 QD11 QD04 QD03 Q912	Q-IC
D-Z	Z906 D933 Z905 D930 D922 Z901 D929 D919 D923 D914 D903 D906 D902 D907 D913 D920 D925 DD02 Z904 D904 D916 D915 D926 D927 Z903 Z902 D925 D928 DD08 DD04 Z907 DD07 DD03 DD10 DD09 DD06 DD05 DD52 DD01 D905 D912 D901	D-Z
F-L-T	LD02 LD01 L902 F902 F903 F901 L901	F-L-T

SOLDER SIDE VIEW



MODIFICATED PARTSLIST

P106 Servo

R231,R232,R235,R236	4822 116 83036 27Ω 1/4W
R233,R234,R237,R238	4822 116 60307 1Ω 1/4W

P506 Main PCB

R537,R558,R579,R602, R756,R757,R846,R847	4822 116 90167 10Ω 1/4W
R628,R629,R671,R672,R673	4822 052 10478 4,7Ω 1/4W

P906 Power supply PCB

R902,R903	deleted
R936	4822 115 90166 10Ω 1/4W
R937	4822 116 83034 1,8Ω 1/4W
R938,R939	4822 116 60307 1Ω 1/4W
D908,D909,D910,D911	deleted
D912	4822 130 82611 Diode RB152
F901,F902	4822 253 30206 Fuse 2A 250V

PD06 Spindle drive PCB

CD11,CD12	deleted
DD07,DD10	4822 130 82422 diode EK16
DD52	4822 130 33305 diode ISS 176
LD03,LD04	4822 526 10543 Ferrite bead

PG06 RGB PCB

RN88,RN89	4822 052 10478 4,7Ω 1/4W

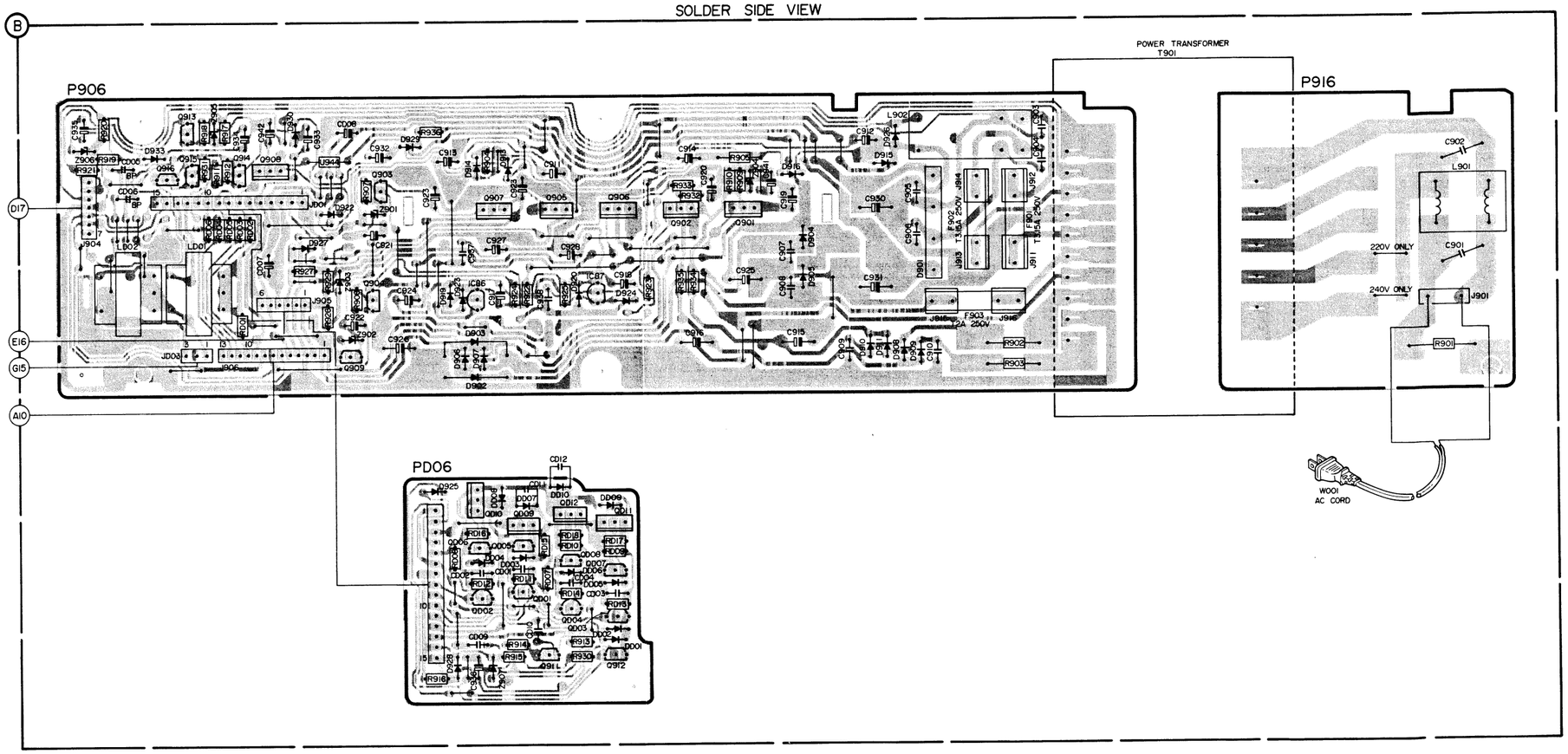
PU 06 OTP μ-COM PCB

DD51	4822 130 33305 diode ISS 176
ZD51,ZD52	4822 130 33759 Zenerdiode 4V7
IC88	4822 209 63184 IC 74HC86
IC89	4822 209 12422 IC 74HC00
QD51	4822 130 16210 IC DTA124ES

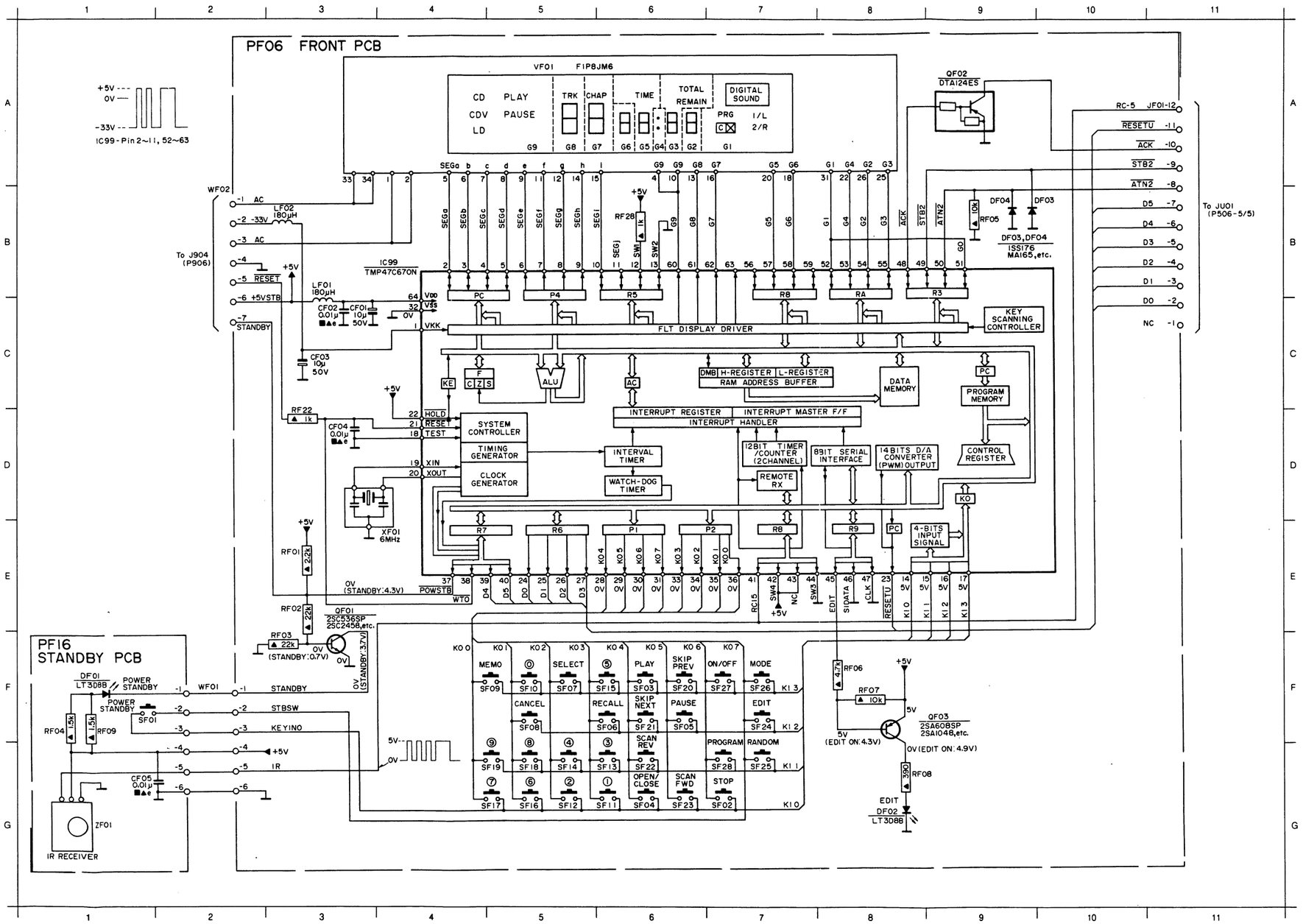
N. P906 POWER SUPPLY/P916 TRANSFORMER/PD06 SPINDLE DRIVE PCBs

R	R920 R918 R917 U944 R907 R936 R904 R924 R922 R925 RD18 RD10 R923 R932 R935 R905 R902 R901 R921 R919 R931 R911 R912 R927 R929 R908 RD08 RD16 RD11 RD15 RD14 RD17 RD09 R910 R909 R903 RD01~RD06 R926 R916 RD12 R915 R914 RD07 R913 R930 RD13	R
C	C935 CD05 C934 C924 C933 CD08 C932 C924 C923 C913 C937 C927 C923 CD12 C911 C928 C914 C920 C941 C907 C919 C912 C930 C905 C903 C902 CD06 CD07 C922 C921 C926 CD02 CD09 C936 CD11 CD01 CD10 C938 CD04 CD03 C918 C916 C925 C908 C915 C909 C931 C906 C910 C904 C901	C
Q-IC	Q913 Q903 IC86 Q907 Q905 IC87 Q906 Q902 Q901 Q916 Q915 Q914 Q908 Q909 Q904 QD10 QD09 Q911 QD12 QD08 QD07 QD11 QD06 QD02 QD05 QD01 QD04 QD03 Q912	Q-IC
D-Z	Z906 D933 Z905 D930 D922 Z901 D929 D919 D923 D914 D903 D913 DD03 DD07 D920 D924 DD09 Z904 D916 D904 D915 D926 D901 D927 Z903 Z902 D925 D928 D906 D907 D902 DD04 DD08 Z907 DD10 DD06 DD05 DD02 DD01 D905 D910 D911 D908 D909	D-Z
F-L-T	LD02 LD01 L902 F902 F903 F901 T901 L901	F-L-T

SOLDER SIDE VIEW



O. PF06 FRONT/PF16 STANDBY SCHEMATIC DIAGRAMS



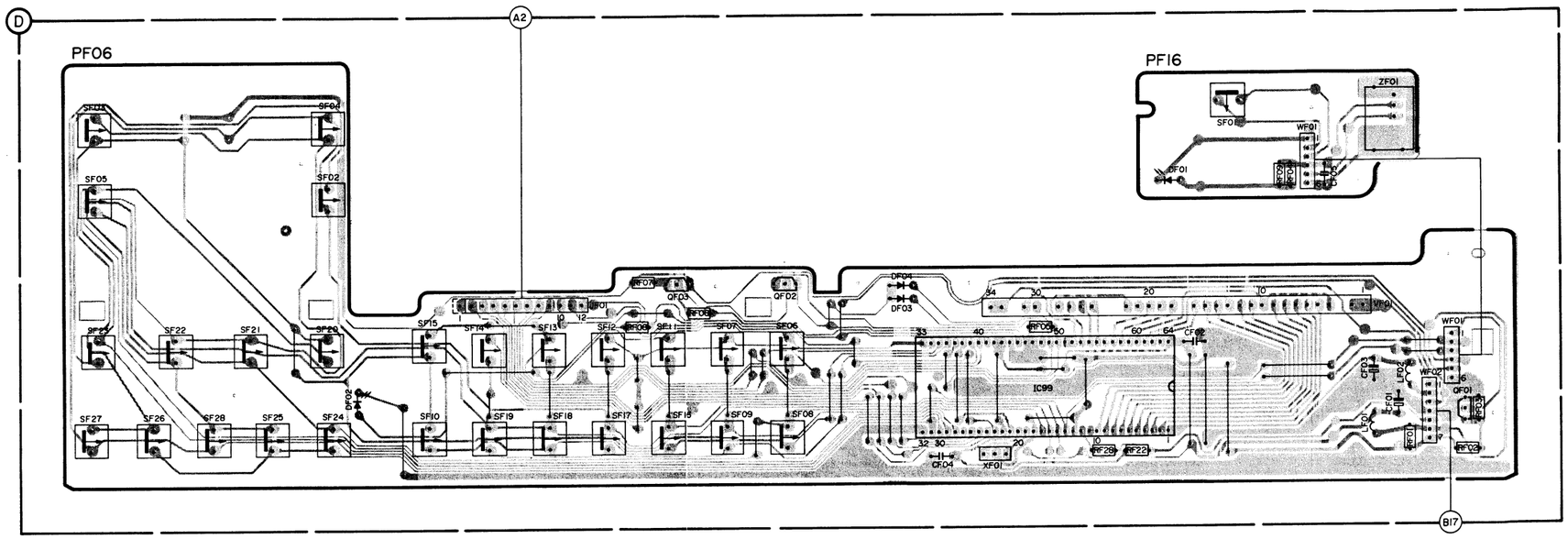
CF01 C3
CF02 C3
CF03 C3
CF04 D3
CF05 G1
DF01 F1
DF02 G8
DF03 B9
DF04 B9
IC99 B4
LF01 B3
QF01 E3
QF02 A9
QF03 F8
RF01 E3
RF02 E3
RF03 F3
RF04 F1
RF05 B9
RF06 F8
RF07 F8
RF08 G8
RF09 F1
RF22 D3
RF28 B6
SF01 F1
SF02 G6
SF03 F6
SF04 G6
SF05 F6
SF06 F5
SF07 F5
SF08 F5
SF09 F4
SF10 F5
SF11 G5
SF12 G5
SF13 G5
SF14 G5
SF15 F5
SF16 G5
SF17 G4
SF18 G5
SF19 G4
SF20 F6
SF21 F6
SF22 G6
SF23 G6
SF24 F7
SF25 G7
SF26 F7
SF27 F6
SF28 G6
XF01 E4
ZF01 G1

PRS.04368
T12/047
BEH. BY 45590B

P. PF06 FRONT/PF16 STANDBY PCBs

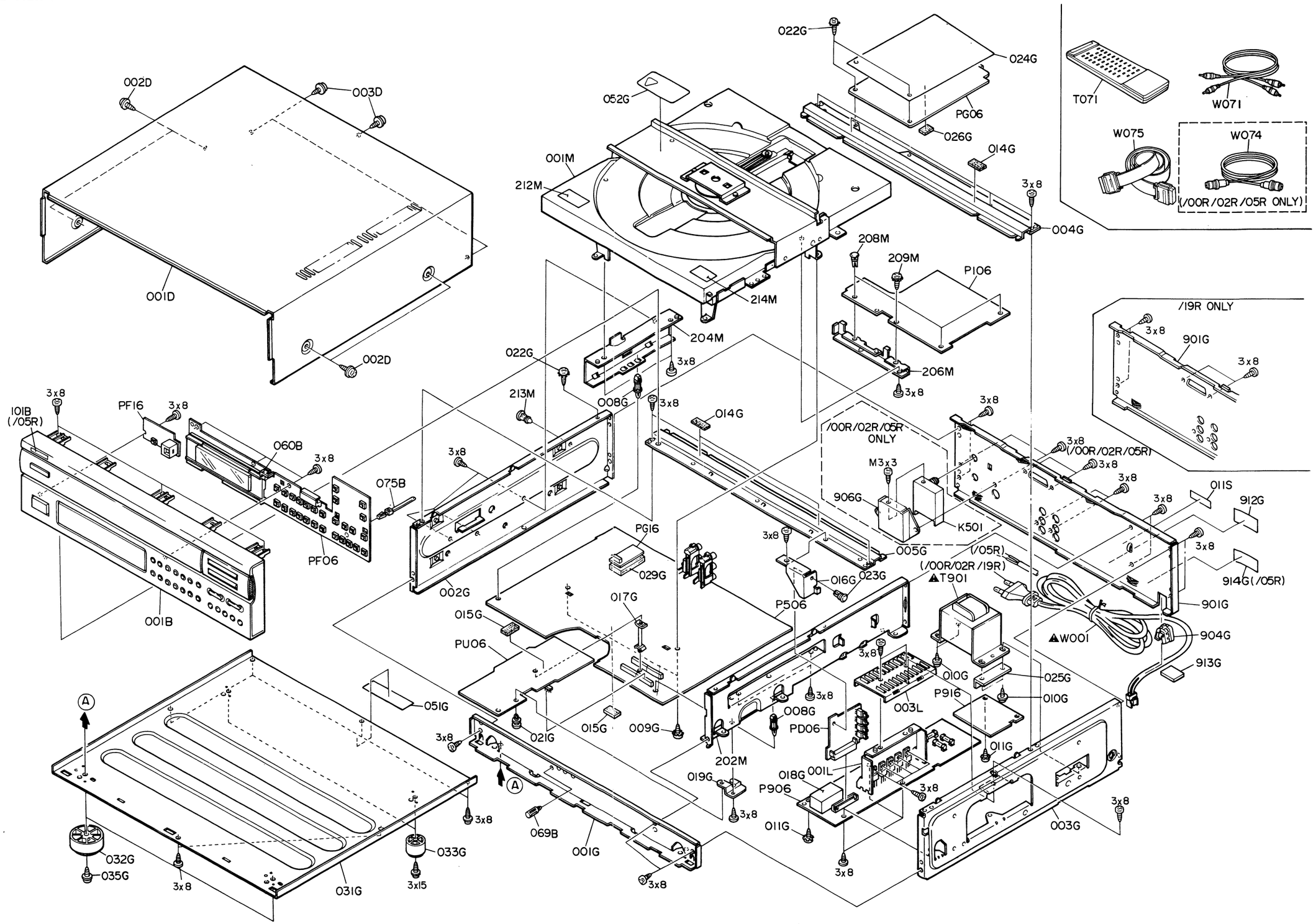
R	RF08 RF07 RF06 RF05 RF28 RF22 RF09 RF04 RF01 RF02 RF03	R
C	CF04 CF02 CF05 CF03 CF01	C
Q-IC	QF03 QF02 IC99 QF01	Q-IC
D-Z	DF02 DF04 DF03 DF01 ZF01	D-Z
L-S-V-X	SF03 SF05 SF22 SF21 SF04 SF02 SF15 SF14 SF13 SF12 SF11 SF07 SF06 SF01 VF01	L-S-V-X
	SF27 SF23 SF26 SF28 SF25 SF24 SF10 SF19 SF18 SF17 SF16 SF09 SF08 XF01 LF01 LF02	

SOLDER SIDE VIEW

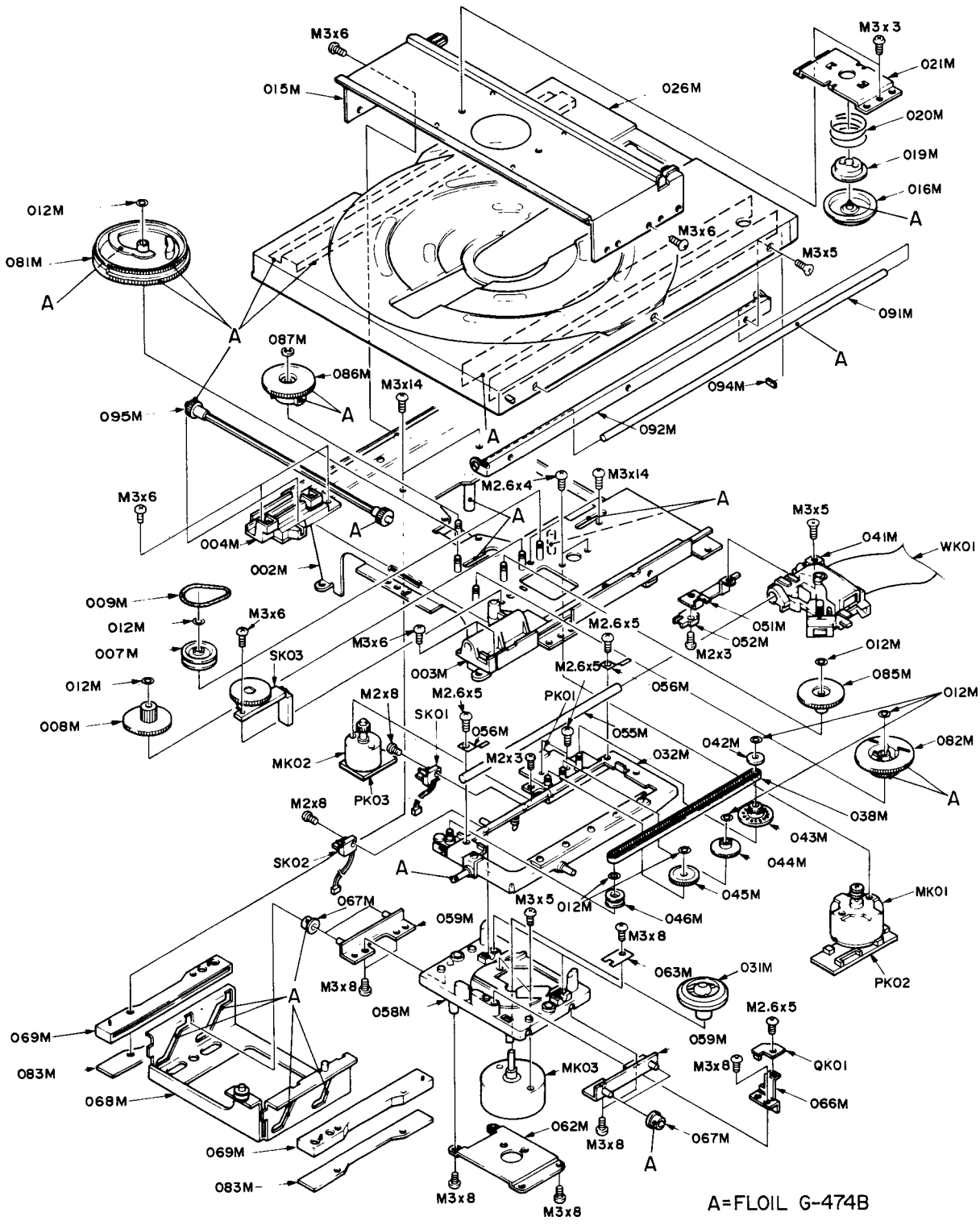


XI. EXPLODED VIEWS

A. EXPLODED VIEW-1



B. EXPLODED VIEW-2



DRAWER MECHANISM AND OPTICAL BLOCK

003M	4822 462 30517	LOADING GUIDE(A)
004M	4822 462 30518	LOADING GUIDE(B) 2-
007M	4822 528 50323	LOADING PULLEY 2-
008M	4822 522 32992	GEAR B 2-
009M	4822 358 31104	LM BELT
012M	4822 532 12029	WASHER
016M	4822 532 12028	CLAMPER ASS'Y
019M	4822 532 12027	CLAMPER RETAINER
020M	4822 492 70831	SPRING
026M	4822 425 20203	TRAY ASS'Y (ABC1) B
038M	4822 358 31105	TIMING BELT
041M	4822 691 30237	PU ASS'Y KHS-130A
042M	4822 532 12031	HOLE PIECE
043M	4822 522 32995	GEAR V
044M	4822 522 32996	GEAR A2
045M	4822 522 32997	GEAR A1
046M	4822 528 50324	PULLEY
052M	4822 401 11385	BELT CLAMPER
055M	4822 535 93168	SLIDE SHAFT
056M	4822 401 11386	SHAFT CLAMPER
058M	4822 464 70577	MD CHASSIS
063M	4822 404 60686	CHASSIS STOPPER
067M	4822 528 90808	ROLLER
069M	4822 404 60684	SLIDE GUIDE
081M	4822 528 30395	CONTROL CAM
082M	4822 522 32993	LOADING GEAR
085M	4822 522 32994	GEAR A
086M	4822 528 30396	TILT CAM
087M	4822 530 70123	E RING
091M	4822 535 93169	LOADING SHAFT 2-
094M	4822 462 71728	CUSHION
095M	4822 522 32998	TRAY GEAR ASS'Y

various

T901	4822 146 21598	POWER TRANS EI60-38
JN01	4822 290 81428	21PIN ANALOG RGB BLU
K501	4822 214 51846	RF MODULATOR UNIT, /00R/02R
K501	4822 214 51848	RF MODULATOR UNIT /05R
W001	4822 321 10729	AC CORD 2.5A 250V /00R/02R/19R
W001	4822 321 10731	A.C. POWER CORD /05R
01	4822 321 61031	AUDIO CORD
W072	4822 321 61029	VIDEO CORD
W074	4822 321 23706	WRL-2121-5090 1.5M P
W075	4822 321 61032	EURO CABLE 1.5M
T071	4822 218 10381	RC400CDV REMOTE CONT

MECHANICAL PARTS

001B	4822 444 40428	FRONT PANEL (ASSY)
060B	4822 256 91749	FTD. HOLDER
075B	4822 401 11384	FRONT PCB. LEAD CLAM
001D	4822 444 60726	TOP COVER
002D	4822 532 11276	SCREW FOR TOP COVER
003D	4822 502 12355	SCREW FOR TOP COVER
008G	4822 401 10944	SUPPORT FOR MAIN PCB
010G	4822 502 12354	SCREW FOR TRANSF
017G	4822 404 60685	SUPPORT FOR ROM PCB
021G	4822 401 11383	PLASTI RIVET FOR ROM
032G	4822 462 41402	LEG(FRONT)
035G	4822 502 12355	SCREW FOR LEG (FRONT
904G	4822 532 60948	BUSH FOR AC CORD
208M	4822 401 11383	PLASTI RIVET FOR SER
213M	4822 535 71081	SPACER KGLS-8R
MK01	4822 361 30327	L MOTOR ASS'Y
MK02	4822 361 30328	SLED MOTOR ASS'Y
MK03	4822 361 30329	SPINDLE MOTOR ASS'Y
PK01	4822 214 51843	PULSE CNTR PCB ASSY
PK02	4822 214 51844	L MOTOR PCB ASS'Y
PK03	4822 214 51845	S MOTOR PCB ASS'Y
QK01	4822 130 82419	FG PCB ASS'Y
SK01	4822 271 30743	SW PCB ASS'Y FOR CD
SK02	4822 271 30744	SW PCB ASS'Y FOR LD
SK03	4822 273 10221	ROTARY SWITCH
WK01	4822 320 50211	FLAT CABLE
901G	4822 444 40433	REAR PANEL (R)
069B	4822 404 60687	SUPPORT FOR FRONT ST
033G	4822 462 41771	LEG(REAR)
901G	4822 444 50644	REAR PANEL (N)
901G	4822 444 40434	REAR PANEL (T)

P506 - 1/5 MAIN PCB VIDEO CKT-A

Crystals

X701	4822 242 73902	15MHZ X-TAL AT-49
X702	4822 242 73903	17MHZ X-TAL AT-49
F501	4822 242 73901	5.1MHZ LPF

IC51	4822 209 63466	TEA7650 (V8000) V2A
IC52	4822 209 63465	MSM7401RS CCD
IC53	4822 209 63461	SAA7630P CCD

C502	4822 124 41246	47UF/ 16V
C528	4822 124 22048	220UF/6.3V
C538	4822 124 41246	47UF/ 16V
C540	4822 124 41246	47UF/ 16V
C543	4822 124 21983	4.7UF/ 50V
C592	4822 124 22048	220UF/6.3V
C613	4822 124 22048	220UF/6.3V
C615	4822 124 22048	220UF/6.3V
C618	4822 124 41246	47UF 16V L=7MM
C620	4822 124 41246	47UF/ 16V
C636	4822 124 22048	220UF / 6.3V L=7MM
C668	4822 124 41246	47UF/ 16V
C672	4822 124 22048	220UF/6.3V
C674	4822 124 22048	220UF/6.3V
C676	4822 124 22048	220UF/6.3V

D501	4822 130 33305	1SS176,MA165,1SS254
D502	4822 130 33305	1SS176,MA165,1SS254
D503	4822 130 33305	1SS176,MA165,1SS254
D506	4822 130 33305	1SS176,MA165,1SS254

F506	4822 242 73895	5.9MHZ LPF
F507	4822 242 73843	DSS306-91-F-223Z NOI
F508	4822 242 73843	DSS306-91-F-223Z NOI
F511	4822 242 73843	DSS306-91-F-223Z NOI
F512	4822 242 73843	DSS306-91-F-223Z NOI
L501	4822 157 62925	LAL02TA820J 82UH
L502	4822 157 62899	LAL02TA221J 220UH
L503	4822 157 62921	LAL02TA151J 150UH
L504	4822 157 62906	LAL02TA120J 12UH
L505	4822 157 62906	LAL02TA120J 12UH
L506	4822 157 62909	LAL02TA220J 22UH
L508	4822 157 62907	LAL02TA150J 15UH
L511	4822 157 62906	12UH LAL05TP120J
L516	4822 157 62898	LAL02TA181J 180UH
L521	4822 157 62911	LAL02TA3R3J 3.3UH
L522	4822 157 62899	LAL02TA221J 220UH
L531	4822 157 62922	LAL02TA330J 33UH
L532	4822 157 62912	LAL02TA560J 56UH
L533	4822 157 62913	EL0606-561J 560UH
L541	4822 157 62923	7.5UH CHOCK COIL
L542	4822 157 62908	2.2UH LAL02TA022J
L543	4822 157 62902	6.8UH LAL02TA068J
L551	4822 157 62909	LAL02TA220J 22UH
L552	4822 157 62909	LAL02TA220J 22UH
L553	4822 157 62909	LAL02TA220J 22UH
L554	4822 157 62909	LAL02TA220J 22UH

Q501	4822 130 42715	A608SP,A1048,A1309,A
Q506	4822 130 42298	C536SP,C2458,C3311,C
Q509	4822 130 42715	A608SP,A1048,A1309,A
Q511	4822 130 42715	A608SP,A1048,A1309,A
Q516	4822 130 42298	C536SP,C2458,C3311,C
Q517	4822 130 42298	C536SP,C2458,C3311,C
Q521	4822 130 42298	C536SP,C2458,C3311,C
Q522	4822 130 42715	A608SP,A1048,A1309,A
Q523	4822 130 42715	A608SP,A1048,A1309,A
Q524	4822 130 42298	C536SP.C2458.C3311.C
Q525	4822 130 42715	A608SP.A1048.A1309.A
Q526	4822 130 42715	A608SP,A1048,A1309,A
Q527	4822 130 42298	C536SP,C2458,C3311,C
Q528	4822 130 42715	A608SP,A1048,A1309,A
Q529	4822 130 42298	C536SP,C2458,C3311,C
Q530	4822 130 42298	C536SP,C2458,C3311,C
Q533	4822 130 42715	A608SP.A1048.A1309.A
Q536	4822 130 42298	C536SP,C2458,C3311,C
Q537	4822 130 42715	A608SP,A1048,A1309,A
Q538	4822 130 42298	C536SP,C2458,C3311,C
Q542	4822 130 42298	C536SP,C2458,C3311,C
Q546	4822 130 60886	2SC1923 Y
Q551	4822 130 42715	A608SP,A1048,A1309,A
Q552	4822 130 61438	2SA1005 L.OR K
Q553	4822 130 61438	2SA1005 L.OR K
Q554	4822 130 60886	2SC1923 Y
Q555	4822 130 60886	2SC1923 Y
Q556	4822 130 42298	C536SP,C2458,C3311,C

R510	4822 116 60318	22 OHM 1/4W RADIAL T
R536	4822 111 91404	150 OHM +- 5% 1/6W
R537	4822 116 60314	10 OHM J 1/4W RADIAL
R546	4822 100 11351	RH0634CS2R TYPE 10K
R558	4822 116 60314	10 OHM J 1/4W RADIAL
R567	4822 111 91404	150 OHM +- 5% 1/6W
R579	4822 116 60314	10 OHM J 1/4W RADIAL
R602	4822 116 60314	10 OHM +- 5% 1/4W
R604	4822 100 11386	RH0634CS2R TYPE 1K O
R628	4822 113 90107	4.7 OHM +- 5% 1/6W
R657	4822 100 11386	1KOHM RH0634C13R TYP
R671	4822 113 90107	4.7 OHM J 1/4W RADIA
R672	4822 113 90107	4.7 OHM J 1/4W RADIA
R673	4822 113 90107	4.7 OHM J 1/4W RADIA

Z501	4822 130 80319	9.1V ZENER EQUIVALEN
Z506	4822 130 80318	6.8V ZENER EQUIVALEN
Z507	4822 130 31554	4.3V ZENER EQUIVALEN

P506 - 2/5 MAIN PCB VIDEO CKT-B

C702	4822 124 22048	220UF / 6.3V L=7MM
C705	4822 124 22048	220UF / 6.3V L=7MM
C721	4822 124 41246	47UF 16V L=7MM
C723	4822 124 41246	47UF 16V L=7MM
C731	4822 125 60165	VCT51G 50PF
C733	4822 125 60165	VCT51G 50PF
C758	4822 124 41246	47UF 16V L=7MM
C760	4822 124 41246	47UF 16V L=7MM
D701	4822 130 33305	1SS176,MA165,1SS254
IC56	4822 209 63464	TBC-MA
IC57	4822 209 60753	TBC-MD
IC58	4822 209 61187	BA15218
IC59	4822 209 61187	BA15218
F711	4822 242 73843	DSS306-91-F-223Z NOI
F712	4822 242 73843	DSS306-91-F-223Z NOI
L711	4822 157 62906	LAL02TA120J 12UH
L712	4822 157 62906	LAL02TA120J 12UH
L713	4822 157 62906	LAL02TA120J 12UH
L714	4822 157 62914	68UH LAL05TA680J
Q701	4822 130 42298	C536SP,C2458,C3311,C
Q706	4822 130 42683	DTC124ES (TP)
Q712	4822 130 42298	C536SP,C2458,C3311,C
Q713	4822 130 61438	2SA1005 L.OR K
Q731	4822 130 42715	A608SP,A1048,A1309,A
Q732	4822 130 42298	C536SP,C2458,C3311,C
R705	4822 050 21501	150 OHM +- 5% 1/4
R756	4822 116 60314	10 OHM J 1/4W RADIAL
R757	4822 116 60314	10 OHM J 1/4W RADIAL
Z701	4822 130 80932	6.2V ZENER EQUIVALEN
Z706	4822 130 80132	3.9V ZENER EQUIVALEN
Z707	4822 130 80132	3.9V ZENER EQUIVALEN
Z511	4822 130 80319	9.1V ZENER EQUIVALEN
Z512	4822 130 80319	9.1V ZENER EQUIVALEN

P506 - 3/5 MAIN PCB AUDIO CKT-A

CA01	4822 124 21739	22UF/16V
CA13	4822 124 41246	47UF/ 16V
CA15	4822 124 41246	47UF/ 16V
CA31	4822 124 22048	220UF/6.3V
CA32	4822 124 22048	220UF/6.3V
CA33	4822 124 22048	220UF/6.3V
CA34	4822 124 22048	220UF/6.3V
CA39	4822 124 21739	22UF/ 16V
CA40	4822 124 21739	22UF/ 16V
CA51	4822 124 21739	22UF/16V
CA52	4822 124 21739	22UF/16V
CA57	4822 124 22048	220UF/6.3V
CA58	4822 124 22048	220UF/6.3V
CA63	4822 124 21739	22UF/ 16V
CA64	4822 124 21898	0.47UF/ 50V
CT03	4822 124 41246	47UF/ 16V
C301	4822 124 21739	10UF/25V
C302	4822 124 21739	10UF/25V
C306	4822 124 41246	47UF/ 16V
C312	4822 124 41246	47UF/ 16V
C314	4822 124 41246	47UF/ 16V
C421	4822 124 41246	47UF/ 16V
C422	4822 124 41246	47UF/ 16V
C423	4822 124 21739	22UF 16V L=7MM
C424	4822 124 21739	22UF 16V L=7MM
C425	4822 124 21739	22UF 16V
C427	4822 124 41246	47UF/ 16V
C428	4822 124 41246	47UF/ 16V

DA01	4822 130 33305	1SS176,MA165,1SS254
DA02	4822 130 33305	1SS176,MA165,1SS254

QA01	4822 130 42298	2SC536SP,2SC2458,2SC
QA02	4822 130 42298	C536SP,C2458,C3311,C
QA03	4822 130 42298	C536SP,C2458,C3311,C
Q301	4822 130 42298	C536SP,C2458,C3311,C
Q302	4822 130 42298	C536SP,C2458,C3311,C
Q303	4822 130 42298	C536SP,C2458,C3311,C
Q304	4822 130 42298	C536SP,C2458,C3311,C
Q305	4822 130 42298	C536SP,C2458,C3311,C
Q306	4822 130 42298	C536SP,C2458,C3311,C
Q307	4822 130 42298	C536SP,C2458,C3311,C
Q403	4822 130 42298	C536SP.C2458.C3311.C
Q404	4822 130 42298	C536SP.C2458.C3311.C
Q405	4822 130 42298	C536SP,C2458,C3311,C
Q407	4822 130 42298	C536SP,C2458, C3311
Q408	4822 130 42298	C536SP,C2458, C3311
Q411	4822 130 42298	C536SP,C2458,C3311,C
Q412	4822 130 42298	C536SP,C2458,C3311,C
Q413	4822 130 42298	C536SP,C2458,C3311,C
QT01	4822 130 42298	2SC536SP,2SC2458,2SC
QU01	4822 130 42298	C536SP,C2458,C3311,C
QU02	4822 130 42298	C536SP,C2458,C3311,C
Q414	4822 130 42298	C536SP,C2458,C3311,C

IC31	4822 209 63455	NJM2233BD
IC45	4822 209 63456	TC74HC4052AP TOSHIBA
IC46	4822 209 61187	BA15218
IC47	4822 209 61187	BA15218
IC72	4822 209 63184	LC74HC86
IC74	4822 209 63183	74HC74
IC90	4822 209 63747	HA27127ANT

LT01	4822 157 62899	LAL02TA221J 220UH
L301	4822 157 62901	EL0607RA392J 3.9MH
FA02	4822 242 73896	144-5188-01 684KHZ
FA03	4822 242 73897	144-5074-01 1066KHZ

P506 - 4/5 MAIN PCB AUDIO CTK-B

C322	4822 124 21739	10UF/25V
C354	4822 124 41243	2.2UF/ 50V
C355	4822 124 22048	220UF/6.3V L=7MM
C360	4822 124 21739	10UF/25V
C363	4822 124 41246	47UF/ 16V
C364	4822 124 22048	220UF/6.3V
C372	4822 124 41246	47UF 16V L=7MM
C373	4822 124 41246	47UF/16V L=7MM
C374	4822 124 41246	47UF/16V L=7MM
C375	4822 124 22048	220UF/6.3V L=7MM
C401	4822 124 22048	22UF 6.3V L=7MM
C413	4822 124 21739	22UF 16V L=7MM
C414	4822 124 21739	22UF 16V L=7MM
C415	4822 124 41246	47UF/ 16V
C416	4822 124 41246	47UF/ 16V
C417	4822 124 41246	47UF/ 16V
C418	4822 124 41246	47UF/ 16V
C419	4822 124 41246	47UF/ 16V
C420	4822 124 41246	47UF/ 16V

D302	4822 130 33305	1SS176,MA165,1SS254
D303	4822 130 33305	1SS176,MA165,1SS254
D304	4822 130 33305	1SS176,MA165,1SS254
D305	4822 130 33305	1SS176,MA165,1SS254
D306	4822 130 33305	1SS176,MA165,1SS254
D307	4822 130 33305	1SS176,MA165,1SS254
D351	4822 130 33305	1SS176,MA165,1SS254
D352	4822 130 33305	1SS176,MA165,1SS254
D354	4822 130 33305	1SS176,MA165,1SS254
D356	4822 130 80156	SVC203
D357	4822 130 33305	1SS176,MA165,1SS254
D358	4822 130 33305	1SS176,MA165,1SS254
D359	4822 130 33305	1SS176,MA165,1SS254
D360	4822 130 33305	1SS176,MA165,1SS254
D361	4822 130 33305	1SS176,MA165,1SS254
D362	4822 130 33305	1SS176,MA165,1SS254
D363	4822 130 33305	1SS176,MA165,1SS254
D364	4822 130 33305	1SS176,MA165,1SS254

F301	4822 242 73892	135-1032-04 1.7MHZ
F302	4822 242 73843	DSS306-91-F-223Z NOI
F303	4822 242 73843	DSS306-91-F-223Z NOI
F304	4822 242 73843	DSS306-91-F-223Z NOI
L302	4822 142 60388	PULS TRANS FOR CD

IC32	4822 209 60045	AN1339 QUAD COMPARAT
IC33	4822 209 63453	SAA7310 DEMODULATOR
IC34	4822 209 73952	UPD41416C,MB81416.
IC35	4822 209 72545	SAA7220P/B (9338 746
IC36	4822 209 63458	LC6543H
IC41	4822 209 63454	TDA1543 16BIT DUAL D
IC43	4822 209 61187	BA15218
IC44	4822 209 61187	BA15218

Q308	4822 130 42298	C536SP,C2458,C3311,C
Q309	4822 130 42298	C536SP,C2458,C3311,C
Q351	4822 130 61438	2SA1005 L.OR K
Q352	4822 130 42683	DTC124ES (TP)
Q353	4822 130 42298	C536SP,C2458,C3311,C
Q354	4822 130 42683	DTC124ES (TP)
Q355	4822 130 42683	DTC124ES (TP)
Q356	4822 130 42683	DTC124ES (TP)
Q357	4822 130 42715	2SA608SP,2SA1048,2SA
Q359	4822 130 42715	A608SP,A1048,A1309,A
Q360	4822 130 42715	A608SP,A1048,A1309,A
Q361	4822 130 42683	DTC124ES (TP)
Q401	4822 130 43819	2SC2878 A OR BRANK T
Q402	4822 130 43819	2SC2878 A OR BRANK T

R368	4822 100 11372	47KOHM RH0634CS4R TY

Crystal

X351	4822 242 73894	11.2896MHZ HC49/U X
X352	4822 242 72223	CERALOCK CST4.00MGW,

Z301	4822 130 80932	6.2V ZENER DIODE
Z302	4822 130 80319	9.1V ZENER DIODE
Z303	4822 130 33948	5.6V ZENER DIODE

P506 - 5/5 MAIN PCB SYSTEM AND MOTOR CONTROL CKT

CT03	4822 124 41246	47UF/ 16V
C813	4822 124 41246	47UF/ 16V
C816	4822 124 21739	22UF/16V
C830	4822 124 41246	47UF/ 16V
C831	4822 124 41246	47UF/ 16V
C833	4822 124 21983	4.7UF/50V
C834	4822 124 41246	47UF 16V
C835	4822 124 41246	47UF 16V
C837	4822 124 22048	220UF 16V
CM12	4822 124 23563	47UF/10V
CM16	4822 124 23563	47UF/10V
CM33	4822 124 23563	47UF/10V
CM51	4822 124 23563	47UF/10V
CM55	4822 124 23563	47UF/10V
CM61	4822 124 23563	47UF/10V
CN05	4822 124 23563	47UF/10V L=5MM
CN29	4822 124 23563	47UF/10V
CN62	4822 124 23563	47UF/10V

IC72	4822 209 63184	LC74HC86
IC74	4822 209 63183	74HC74
IC75	4822 209 71277	PD0011A
IC91	4822 209 60626	DSC-M2
IC92	4822 209 63468	NJM082D
IC93	4822 209 61187	BA15218

QT01	4822 130 42298	2SC536SP,2SC2458,2SC
QU01	4822 130 42298	C536SP,C2458,C3311,C
QU02	4822 130 42298	C536SP,C2458,C3311,C
Q801	4822 130 42298	C536SP,C2458,C3311,C
Q802	4822 130 42298	C536SP,C2458 C3311
Q801	4822 130 42298	C536SP,C2458,C3311,C
Q802	4822 130 42298	C536SP,C2458 C3311

D801	4822 130 33305	1SS176,MA165,1SS254
D802	4822 130 33305	1SS176,MA165,1SS254
D803	4822 130 33305	1SS176,MA165,1SS254
D804	4822 130 33305	1SS176,MA165,1SS254
D805	4822 130 33305	1SS176,MA165,1SS254
D806	4822 130 33305	1SS176,MA165,1SS254
D807	4822 130 33305	1SS176,MA165,1SS254
D808	4822 130 33305	1SS176,MA165,1SS254
D809	4822 130 33305	1SS176,MA165,1SS254
D810	4822 130 33305	1SS176,MA165,1SS254
D811	4822 130 33305	1SS176,MA165,1SS254
D812	4822 130 33305	1SS176,MA165,1SS254

Various

FM01	4822 242 73899	4.43MHZ BPF
FM02	4822 320 40239	380NS DELAY PRI
FM03	4822 320 40241	380NS DELAY POST
FM04	4822 242 73898	3.5MHZ LPF
FM06	4822 320 40242	64US DELAY EN645-A51
FM11	4822 320 40239	380NS DELAY PRI
FM12	4822 320 40241	380NS DELAY POST
FN11	4822 320 40239	380NS DELAY PRI
FN12	4822 320 40241	380NS DELAY POST
FN13	4822 242 73899	4.43MHZ BPF

F801	4822 242 73843	DSS306-91-F-223Z NO
LM12	4822 157 62924	8.2UH CHOKE COIL
LM31	4822 157 62919	LAL02TA101J 100UH
LM32	4822 157 62919	LAL02TA101J 100UH
LM33	4822 157 62919	LAL02TA101J 100UH
LN16	4822 157 62919	LAL02TA101J 100UH
LT01	4822 157 62899	LAL02TA221J 220UH
L901	4822 157 62918	LINE FILTER UF2327S-

Z901	4822 130 82423	MTZJ6.8A
Z902	4822 130 82423	MTZJ6.8A
Z904	4822 130 82423	MTZJ6.8A

RGB PCB PG06

CM31	4822 124 22476	4.7UF/ 25V
CM54	4822 124 22319	100UF 6.3V L=5MM
CN11	4822 124 22319	100UF 6.3V L=5MM
CN13	4822 124 22319	100UF 6.3V L=5MM
CN31	4822 124 23561	470UF 4V L=7MM
CN32	4822 124 23561	470UF 4V L=7MM
CN33	4822 124 23561	470UF 4V L=7MM
CN52	4822 124 22319	100UF/6.3V
CN65	4822 124 22319	100UF/6.3V
CN67	4822 124 22319	100UF/6.3V
DM01	4822 130 33305	1SS176,MA165,1SS245
DM02	4822 130 33305	1SS176,MA165,1SS245
DN01	4822 130 33305	1SS176,MA165,1SS254
DN02	4822 130 33305	1SS176,MA165,1SS254
DN03	4822 130 33305	1SS176,MA165,1SS254
FN01	4822 242 73843	DSS306-91-F-223Z NO
IC64	4822 209 63183	74HC74
IC65	4822 209 63471	74HC08
IC66	4822 209 71833	V7020
IC67	4822 209 71835	V7040
IC68	4822 209 63469	UPD6451CX
IC69	4822 209 70095	DUAL MONO-MULTI MC14
IC70	4822 209 83839	UPD4053BC
LM11	4822 157 62902	6.8UH LAL02TA6R8J
LN01	4822 157 62922	LAL02TA330J 33UH
QM01	4822 130 42298	C536SP,C2458,C3311,C
QM02	4822 130 42298	C536SP,C2458,C3311,C
QM11	4822 130 42298	C536SP,C2458,C3311,C
QM12	4822 130 42298	C536SP,C2458,C3311,C
QM13	4822 130 42715	A608SP,A1048,A1309,A
QM16	4822 130 42298	C536SP,C2458,C3311,C
QM17	4822 130 42298	C536SP,C2458,C3311,C
QM18	4822 130 42298	C536SP,C2458,C3311,C
QN22	4822 130 42715	A608SP,A1048,A1309,A
QN23	4822 130 42298	C536SP,C2458,C3311,C
RM12	4822 100 11426	RH0634CS2R TYPE 470
RM19	4822 100 11426	RH0634CS2R TYPE 470
RM22	4822 100 11426	RH0634CS2R TYPE 470
RM37	4822 100 11351	10KOHM RH0634C14R TY
RM39	4822 100 11426	RH0634CS2R TYPE 470
RN83	4822 113 90107	4.7 OHM +- 5% 1/4W
RN88	4822 113 90107	4.7 OHM +- 5% 1/4W
RN89	4822 113 90107	4.7 OHM +- 5% 1/4W

Crystals

XM01	4822 242 72593	X-TAL 4.43MHZ

PF06 FRONT PCB

CF01	4822 124 23559	10UF/ 50V
CF03	4822 124 23559	10UF/ 50V
DF01	4822 130 80326	LT3D8B RED 3O
DF02	4822 130 80326	LT3D8B RED 3O
DF03	4822 130 33305	1SS176.MA165.1SS254
DF04	4822 130 33305	1SS176.MA165.1SS254
IC99	4822 209 63457	FRONT CPU TMP47C670N
LF01	4822 157 62898	LAL02TA181J 180UH
LF02	4822 157 62898	LAL02TA181J 180UH
QF01	4822 130 60839	2SC2458 Y,GR
QF02	4822 130 42593	DTA124ES (TP)
QF03	4822 130 60839	2SA1048 Y,GR

Various

SF01	4822 276 12455	TACT SWICH ALPS-SKHV
SF02	4822 276 12455	TACT SWICH ALPS-SKHV
SF03	4822 276 12455	TACT SWICH ALPS-SKHV
SF04	4822 276 12455	TACT SWICH ALPS-SKHV
SF05	4822 276 12455	TACT SWICH ALPS-SKHV
SF06	4822 276 12455	TACT SWICH ALPS-SKHV
SF07	4822 276 12455	TACT SWICH ALPS-SKHV
SF08	4822 276 12455	TACT SWICH ALPS-SKHV
SF09	4822 276 12455	TACT SWICH ALPS-SKHV
SF10	4822 276 12455	TACT SWICH ALPS-SKHV
SF11	4822 276 12455	TACT SWICH ALPS-SKHV
SF12	4822 276 12455	TACT SWICH ALPS-SKHV
SF13	4822 276 12455	TACT SWICH ALPS-SKHV
SF14	4822 276 12455	TACT SWICH ALPS-SKHV
SF15	4822 276 12455	TACT SWICH ALPS-SKHV
SF16	4822 276 12455	TACT SWICH ALPS-SKHV
SF17	4822 276 12455	TACT SWICH ALPS-SKHV
SF18	4822 276 12455	TACT SWICH ALPS-SKHV
SF19	4822 276 12455	TACT SWICH ALPS-SKHV
SF20	4822 276 12455	TACT SWICH ALPS-SKHV
SF21	4822 276 12455	TACT SWICH ALPS-SKHV
SF22	4822 276 12455	TACT SWICH ALPS-SKHV
SF23	4822 276 12455	TACT SWICH ALPS-SKHV
SF24	4822 276 12455	TACT SWICH ALPS-SKHV
SF25	4822 276 12455	TACT SWICH ALPS-SKHV
SF26	4822 276 12455	TACT SWICH ALPS-SKHV
SF27	4822 276 12455	TACT SWICH ALPS-SKHV
SF28	4822 276 12455	TACT SWICH ALPS-SKHV
VF01	4822 130 90942	FIP8JM6 (LD)
XF01	4822 242 73893	6MHZ CERAMIC RESONAT
ZF01	4822 130 81254	GP1U520X 36.0KHZ IR-

P906 POWER SUPPLY PCB

C901	4822 122 33276	DE7150 F 103M 400V
C902	4822 122 33276	DE7150 F 103M 400V
C915	4822 124 22239	3300UF 25V RA2 TYPE
C916	4822 124 22239	3300UF 25V RA2 TYPE
C934	4822 124 23559	10UF/ 50V
C935	4822 124 23559	10UF/ 50V

DD01	4822 130 33305	1SS176,MA165,1SS254
DD02	4822 130 33305	1SS176,MA165,1SS254
DD03	4822 130 33305	1SS176,MA1650S254
DD04	4822 130 33305	1SS176,MA165,1SS254
DD05	4822 130 33305	1SS176,MA165,1SS254
DD06	4822 130 33305	1SS176,MA165,1SS254
DD07	4822 130 82421	1D3 1A/200V
DD08	4822 130 82422	EK16 1.5A/60V S.B.D
DD09	4822 130 82422	EK16 1.5A/60V S.B.D
DD10	4822 130 82421	1D3 1A/200V
D901	4822 130 82425	RBA402 4A/200V BRIDG
D902	4822 130 82422	EK 1.5A/60V S.B.D
D903	4822 130 82422	EK 1.5A/60V S.B.D
D904	4822 130 82421	1D3 1A/200V
D905	4822 130 82421	1D3 1A/200V
D906	4822 130 82421	1D3 1A/200V
D907	4822 130 82421	1D3 1A/200V
D908	4822 130 82421	1D3 1A/200V
D909	4822 130 82421	1D3 1A/200V
D910	4822 130 82421	1D3 1A/200V
D911	4822 130 82421	1D3 1A/200V
D913	4822 130 82421	1D3 1A/200V
D914	4822 130 82421	1D3 1A/200V
D915	4822 130 82421	1D3 1A/200V
D916	4822 130 82421	1D3 1A/200V
D919	4822 130 33305	1SS176,MA165,1SS254
D920	4822 130 33305	1SS176,MA165,1SS254
D922	4822 130 33305	1SS176,MA165,1SS254
D923	4822 130 33305	1SS176,MA165,1SS254
D924	4822 130 33305	1SS176,MA165,1SS254
D925	4822 130 33305	1SS176,MA165,1SS254
D926	4822 130 33305	1SS176,MA165,1SS254
D927	4822 130 33305	1SS176,MA165,1SS254
D928	4822 130 33305	1SS176,MA165,1SS254
D929	4822 130 82421	1D3 1A/200V
D930	4822 130 82421	1D3 1A/200V
D931	4822 130 33305	1SS176,MA165,1SS254
D933	4822 130 82421	1D3 1A/200V

Fuses

F901	4822 253 30027	3.15 A 250V BS LISTE
F902	4822 253 30027	3.15 A 250V BS LISTE
F903	4822 253 30206	2 A 250V BS LISTED

IC86	4822 209 71902	NJM 78L12A
IC87	4822 209 73524	NJM 79L12A

LD01	4822 157 62926	S0627 2.6MH 1A
LD02	4822 157 62926	S0627 2.6MH 1A

QD01	4822 130 60886	2SC1923 Y
QD02	4822 130 61438	2SA1005 L OR K
QD03	4822 130 60886	2SC1923 Y
QD04	4822 130 61438	2SA1005 L OR K
QD05	4822 130 60107	2SA1048 Y,GR
QD06	4822 130 60839	2SC2458 Y,GR
QD07	4822 130 60107	2SA1048 Y,GR
QD08	4822 130 60839	2SC2458 Y,GR
QD09	4822 130 62548	2SB1185 E OR F
QD10	4822 130 62549	2SD1762 E OR F
QD11	4822 130 62548	2SB1185 E OR F
QD12	4822 130 62549	2SD1762 E OR F
Q901	4822 130 61442	2SD1913 R,S
Q902	4822 130 61359	2SB1274 R,S
Q903	4822 130 60839	2SC2458 Y,GR
Q904	4822 130 60839	2SA1048 Y,GR
Q905	4822 130 61442	2SD1913 R,S
Q906	4822 130 61359	2SB1274 R,S
Q907	4822 130 61442	2SD1913 R,S
Q908	4822 130 61179	2SD2037 E,F
Q909	4822 130 60839	2SA1048 Y,GR
Q911	4822 130 60839	2SC2458 Y,GR
Q912	4822 130 60839	2SC2458 Y,GR
Q913	4822 130 61417	2SB1240 TV-2 PNP Q,R
Q914	4822 130 61417	2SB1240 Q,R
Q915	4822 130 60839	2SC2458 Y,GR
Q916	4822 130 42683	DTC124ES (TP)
Q917	4822 130 61179	2SD2037 E,F

RD15	4822 116 60295	47 OHM J 1/4W
RD16	4822 116 60295	47 OHM J 1/4W
RD17	4822 116 60295	47 OHM J 1/4W
RD18	4822 116 60295	47 OHM J 1/4W
R902	4822 116 82821	1.5 OHM J 1/2W
R903	4822 116 82821	1.5 OHM J 1/2W
R904	4822 111 30006	47 OHM +-5% 1/4W
R905	4822 111 30006	47 OHM +-5% 1/4W
R934	4822 116 60307	1 OHM J 1/4W
R935	4822 116 60307	1 OHM J 1/4W
R936	4822 116 60307	1 OHM J 1/4W

Z903	4822 130 33759	4.7V ZENER EQUIVALEN
Z905	4822 130 81729	MTZJ33D
Z906	4822 130 80318	6.8V ZENER EQUIVALEN
Z907	4822 130 80316	3.6V ZENER EQUIVALEN

Various

L902	4822 280 20467	RELAY UB-5MBU

P106 SERVO PCB

C131	4822 124 21736	1UF/50V
D101	4822 130 33305	1SS176,MA165,1SS254
D102	4822 130 33305	1SS176,MA165,1SS254
D104	4822 130 33305	1SS176,MA165, 1SS25
IC20	4822 290 60997	HA11529NT (SERVO)
IC21	4822 209 61187	BA15218
IC22	4822 209 61187	BA15218
IC23	4822 209 61187	BA15218
IC24	4822 209 61187	BA15218
IC25	4822 209 61379	CXA1081Q
IC26	4822 209 83839	UPD4053BC
IC27	4822 209 83654	NJM4556D
IC28	4822 209 83654	NJM4556D
IC29	4822 209 61187	BA15218
Q101	4822 130 42683	DTC124ES(TP)
Q102	4822 130 42683	DTC124ES (TP)
Q103	4822 130 42683	DTC124ES (TP)
Q104	4822 130 42593	DTA124ES (TP)
Q105	4822 130 60839	2SC2458 Y,GR
Q106	4822 130 42683	DTC124ES (TP)
Q108	4822 130 61417	2SB1240 Q,R
Q110	4822 130 42683	DTC124ES (TP)
Q111	4822 130 42683	DTC124ES(TP)
Q201	4822 130 62547	STA451C
Q202	4822 130 62547	STA451C
Q281	4822 130 60839	2SC2458 Y,GR
Q282	4822 130 60839	2SC2458 Y,GR
R123	4822 100 11373	4.7KOHM RH0634CS3R T
R124	4822 100 11373	4.7KOHM RH0634CS3R T
R133	4822 100 11351	10K OHM RH634CJ4R TY
R152	4822 116 60422	2.2 OHM +-5% 2W
R159	4822 116 60295	47 OHM +-5% 1/4W
R174	4822 100 11352	22KOHM RH0634CJ4R TY
R178	4822 100 11386	1K OHM RH634CJ4R TYP
R196	4822 116 60422	2.2 OHM +-5% 2W
R199	4822 116 60295	47 OHM +-5% 1/4W
R226	4822 116 60295	47 OHM +=5% 1/4W
R229	4822 116 60421	2.2 OHM +-5% 1W
R255	4822 100 11471	100KOHM RH0634C15R T
R273	4822 116 60295	47 OHM +-5% 1/4W
R276	4822 116 60421	2.2 OHM +-5% 1W
R286	4822 100 11386	RH0634CS2R TYPE 1K O
Z101	4822 130 80316	3.6V ZENER

ROM PCB

Various

LU51	4822 157 62898	LAL02TA181J 180UH
XU51	4822 242 72223	CERALOCK CST4.OOMGW
IC85	4822 209 51966	OTP ROM 256K BIT (PA
IC80	4822 209 12422	74HCOO HI SPEED CMOS
IC81	4822 209 61688	74HC02
IC82	4822 209 12422	74HCOO HI SPEED CMOS
IC83	4822 209 63741	CXD 1095Q
IC84	4822 209 63742	HD 6303 YP

SERVICE TOOLS

TEST STAND	4822 395 90896
TURNTABLE ADJUST.	4822 395 80389
3 P EXT. CABLE	4822 321 61071
11P EXT. CABLE	4822 321 61072
12P EXT. CABLE	4822 321 61073
24P FLAT CABLE	4822 321 61124
VIDEO TEST DISC	4822 397 30207
CD TEST DISC 5A	4822 397 30096
1,5 mm HEX Wrench	4822 395 50081

Vorl.

CDV 400

IMS 93-006

Service
Service
Service

Service & Support IMS

Service Information

SOFTWARE MODIFICATION

How to use
Adapt the partslist in the Service Manual.

Modification
The control software in the ROM IC 85 on PU 06 is changed.

Reason
Special single sided 30 cm discs cannot be played for the whole disc.

Cause
Because this special disc has a lower weight then the normal double sided disc, the player recognizes this disc as a 20 cm disc. And the Laser disc player stops playing this disc when approx. 20 cm of the disc has been played.

Introduction
July 1993

Situation
From now on this IC with 12 nc 4822 209 51966 will have the modified software.

Already published Service informations for this model;

IMS 91-004	**Service Manual changes**
IMS 91-008	**Complete optical mechanism.**

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